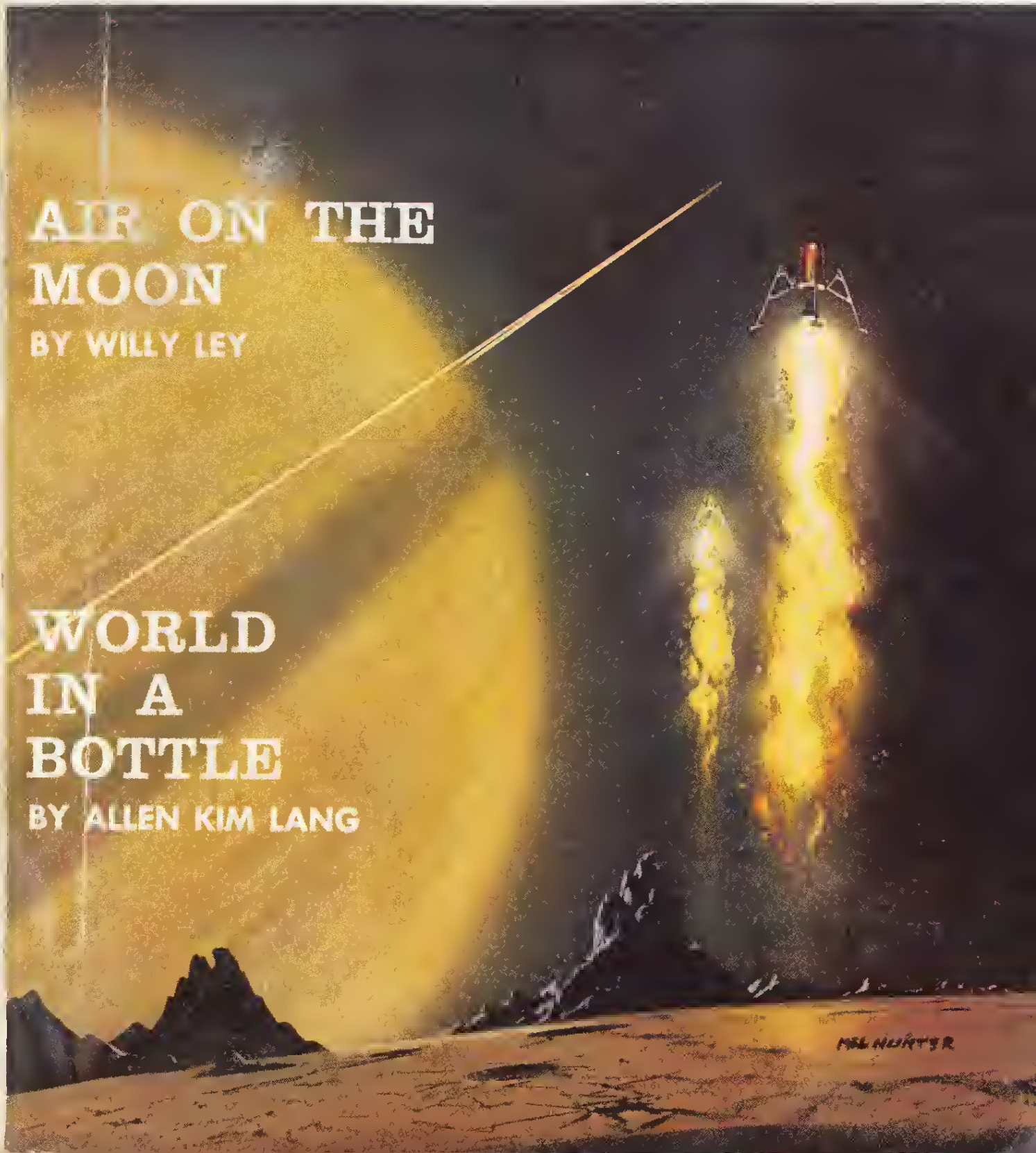
Galaxy®

MAGAZINE

OCTOBER 1960

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AIR ON THE MOON

BY WILLY LEY

WORLD IN A BOTTLE

BY ALLEN KIM LANG

GALAXY

OCTOBER 1960

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OCTOBER, 1960 **Galaxy** VOL. 19, NO. 1

MAGAZINE

Also Published in
Great Britain, France, Italy, Germany, Finland and Sweden

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GALAXY MAGAZINE is published bi-monthy by Galaxy Publishing Corporation. Main offices: 421 Hudson Street, New York 14, N. Y. 50¢ per copy. Subscription: (6 copies) $2.50 per year in the United States, Canada, Mexico, South and Central America and U. S. Possessions. Elsewhere $3.50. Entered as second-class matter at the Post Office, New York, N. Y. Copyright, New York 1960, by Galaxy Publishing Corporation, Robert M. Guinn, president. All rights, including translations reserved. All material submitted must be accompanied by self-addressed stamped envelopes. The publisher assumes no responsibilty for unsolicited material. All stories printed in this magazine are fiction, and any similarity between characters and actual persons is coincidental.

Printed in the U.S.A. by The Guinn Co., Inc. N. Y. Title Reg. U.S. Pat. Off.

NOTES

JUNE editorial called on authors to offer interesting aliens, not just tentacled ones. Offered examples like rackabore —animal with two short side legs adapted to hillside living, but too specialized because left- and right-legged can't turn in opposite direction. Amplifies Robert A. Heinlein: "In southern Missouri where I was born we have two local varieties, the Hillside Snee and the Sidehill Murk, which have solved the problem of how to turn around. They have very large mouths—when closely pursued, they open same quickly, jump through, turning themselves inside out, and thus can reverse direction. This works just fine with the Snee, which is smooth-skinned. Unfortunately the Murk is fuzzy curly; once the fuzz is inside, it tickles poor beastie and he has a tendency to laugh himself to death, unless he again reverses quickly. The Murk is thus rapidly becoming extinct."

Raise a collection? They're fun. Like Fund for Widow of Unknown Soldier—went over the top till spoil sported. And recent classified ad saying, "This is your last chance to send $1 to" and named nothing but a box number; people did send their buck.

J. F. Bone in town not long ago. Veterinarian prof at U. of Oregon, thinks of self as short, tubby, absent-minded — could snatch horns off charging water buffalo, forgets nothing—*not a thing*. Got onto subject of aliens and animals; what else with a vet? Mentioned above and alligators in N. Y. C. sewage system. Got same damned skeptical laugh as when showing an egg can't be crushed between hands if held lengthwise—no one has ever done it and principle is being worked into new building materials.

Explanation of alligators in N. Y. C. sewage system: baby alligators cute and tiny, but the things *grow*, get flushed away. Doc Bone thoughtful, realized food plentiful, temperature great —blend of hot and cold water, no winter wind; they should prosper. They do.

Bone solved lion-versus-tiger controversy in return for fascinating info on alligators. One lion, one tiger, dead lion—tiger bigger, heavier, smarter. Six lions, six tigers, six dead tigers, most or all lions alive—tigers hunt singly; lions gang up, would take each tiger in turn.

Doc Bone went on to claim membership in club of vets who

have spayed male cats—once. Horrible feeling, he says, fishing around in welter of sweat. Fast look; owner said spay but didn't know sex of cat. Stitch, alter, charge double for ghastly moment, check carefully ever after.

I looked closely; memory of the ghastly moment still had him sweating. Evidently not an experience one gets over readily.

Neither is extrapolating sewage systems after accumulation of high-interest data and then finding it all go down the drain. Reason later. Data:

Detergents, first breakthrough in cleansing agents since discovery of soap, reported on here some while ago as coming out of mains in mile-long, house-high, unbustable bubbles. Hose crews needed on 24-hour duty till bubble problem solved.

Fine, steady uptrend in sewage engineering that would let a fellow take a sound flying guess into the future. Now? Pow! How? In a minute.

Ancient cities limited in size by sanitation facilities. Rome's Cloaca Maxima caused first population explosion. Sewer chases popular in books, films, TV shows. Skip all that to short while ago. Sterilized sludge first-rate topsoil —for Park Department. Methane gas by-product hot competitor against natural or illuminating gas—but rigid restrictions on sale.

Put sewage in private hands, I'd have said. There's a fortune in it.

But not now. Radioactive wastes? Nope, they're barred. The wonder drugs—antibiotics, tranquilizers, steroids and so forth—it'd take a miracle of extrapolation to figure effects on topsoil manufacture, deep-sea farming and other such marvels that free enterprise might have plumbed.

Will situation settle down? Doubtful—all breakthroughs like ones in drugs create more breakthroughs. Still, there might be some in sanitation engineering; busting the detergent bubble was one. (Wonder how they did it, but no use querying them now. Them? Oh, forgot to mention Dept. of Sanitation has a publicity section. Private ownership, though, and there'd have been a seat on the Exchange, advertising campaigns, maybe a TV show called, say, "The Man from Flushing.")

Home again in Oregon, Dr. Bone wrote that his daughter, 16, thinks he's unplugged and I'm UHF. My son, 18, thinks other way round. Wrote back that this damage to parental self-esteem is inexcusable in modern civilization, suggested organized Teen Exchange, to begin the minute teeners know everything except why their parents are so cubic, to end the minute they outgrow it, with enough visits in between to see that this is the best possible arrangement.

Maybe it is at that.

What did I have in mind here?

—"Everytime someone says, 'I don't believe in theories,' a theory dies. Do *you* believe in theories?"

—"The cat comes on little fog feet."

Every writer has things like that in his idea file, like lady author who woke in great excitement, scribbled, went back to sleep—the cosmic discovery was safe—and read in the morning: "Hoggimus, higgimus, men are polygamous; higgimus, hoggimus, women monogamous."

Note on the koala story. Oh, yes! Man with very tired voice phoned one evening; he worked for Railway Express and had a koala for me and what was the best way to my address? I said, "A *what?*" and he wearily read off name and address of consignor, a woman in Australia, my name and address and amount of insurance—$10,000. I poked for a break in the story, but there was none; all heavily insured items were accompanied, he had done it for 15 years, and he'd deliver in the morning. I asked why would anybody send me something insurable at $10,000 and how was I to feed the pickiest eater on Earth? He said his job was to make the delivery, not do detective work, and he had a supply of food for the koala for a few days.

I called Willy Ley, who agreed that eucalyptus leaves were a problem, but koalas couldn't legally be shipped out of Australia and was I sure this wasn't from Mexico, where they were being bred? The insurance? Entirely possible—getting a koala safely ½ around the world is quite a trick. Asked to be kept informed. I said sure.

Man phoned, had checked into hotel, shaved, eaten. *Very* tired. Would I take delivery that night so he could get home to family in Calif.? I said sure. Would I pay for taxi so he could make certain train? I said sure, kept Ley informed.

Phone again. Right downstairs, big battle with taxi driver—koala had messed upholstery, would I —I said bring up driver and I'd take care of everything. Called Ley. He said, "Oh, *ho!* A koala wouldn't mess—hard and dry, like a goat's. You won't see the man, but if—" I said sure. No man, no koala, natch, but beautiful detail work, except that last bit, and fine acting. My compliments, and my thanks for a fun evening.

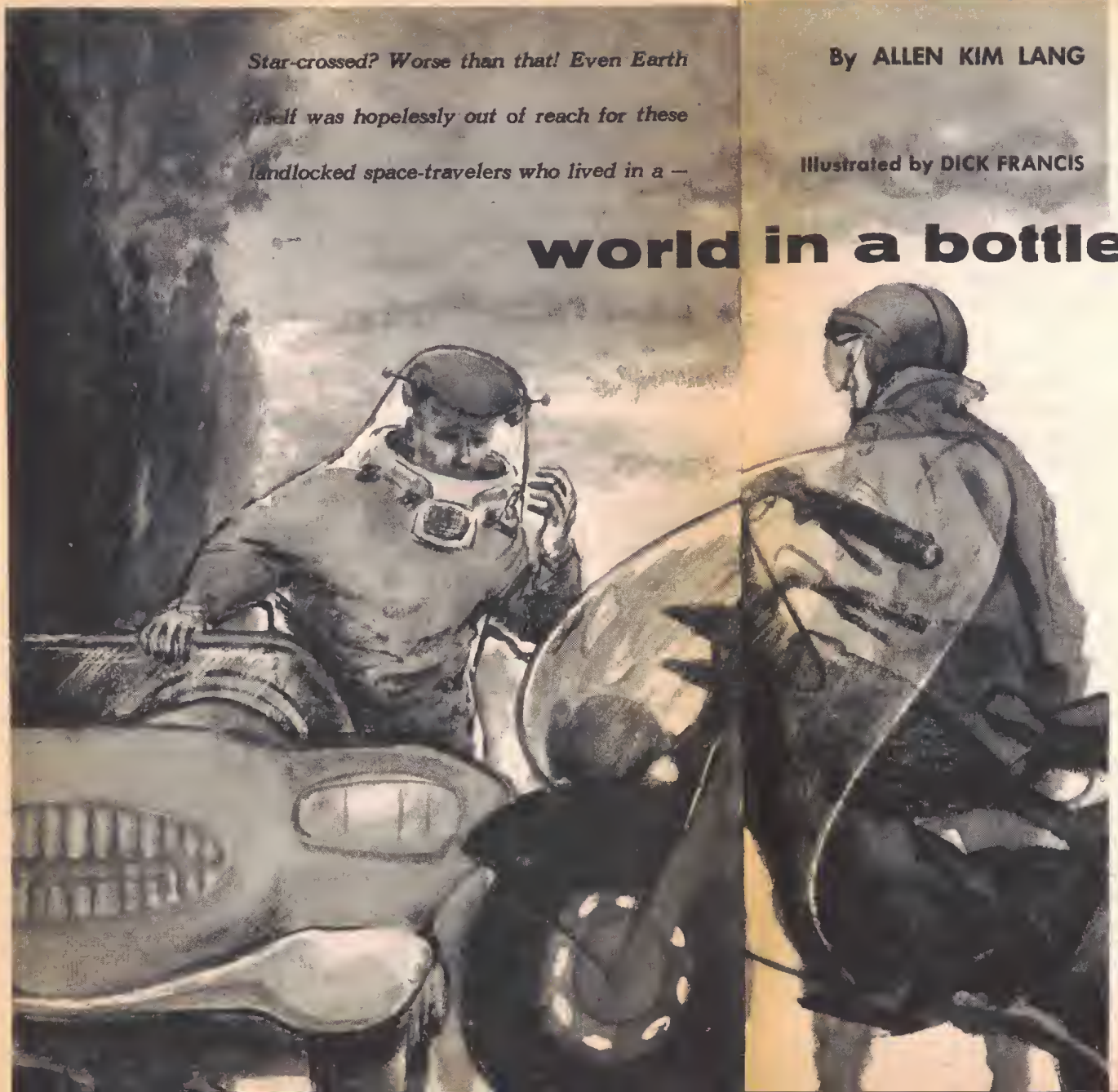
— H. L. GOLD

Star-crossed? Worse than that! Even Earth itself was hopelessly out of reach for these landlocked space-travelers who lived in a —

world in a bottle

By ALLEN KIM LANG

Illustrated by DICK FRANCIS



I

POURING sweat and breathing shallow, I burned east on U.S. Twenty at ninety miles an hour, wishing I could suck into my lungs some of the wind that howled across the windshield.

I heard the siren in my phones. I glanced out the left side of my helmet to find a blue-clad figure on motorcycle looming up beside me, waving me toward the shoulder. A law-abider to the last gasp of asphyxia, I braked my little green beast over to the berm. The state cop angled his bike across my left headlamp and stalked back to where I sat, tugging a fat book of traffic-tickets out of his hip pocket.

"Unscrew that space-helmet, Sonny," he said. "You've just been grounded."

"Grounded, I'll grant," I said, my voice wheezing from the speaker on the chest of my suit; "but I can't take off the fishbowl, officer."

"Then maybe you'd better climb out of your flying saucer," the policeman suggested. "And if you're toting pearl-handled ray-guns, just leave 'em hang."

I got out of the car, keeping my hands in view, feeling like the fugitive from space-opera this cop evidently took me for. He examined me the way a zoologist might examine the first live specimen of a new species of carnivore; very in-

terested, very cautious. After observing the cut of my wash-and-wear plastic sterility-suit — known to us who wear them as a chastity-suit — the policeman walked around me to examine my reserve-air tank, which is cunningly curved and cushioned against my spine so that I can lean back without courting lordosis. He inspected the bubble of plastic that fit over my head like the belljar over a museum specimen, and stared at the little valve on the left shoulder of my suit, where used air was wheezing out asthmatically. "I guess fallout has got you bugged," he said.

"Not fallout, bacteria," I explained. "I'm one of the Lapins from Central University."

"That's nice," the policeman said. "And I'm one of the Bjornsons, from Indiana State Police Post 1-A. What were you trying to do just now, break Mach One on wheels? Or do you maybe come from one of these foreign planets that don't know the American rules of the road?"

I breathed deep, trying to find myself some oxygen. "I was born right here in Indiana," I said. "The reason I'm wearing this suit and helmet is that I'm bacteriologically sterile."

"So maybe you could adopt a kid," Officer Bjornson suggested.

"Sterile like germ-free," I said. "Gnotobiotic. I grew up in the Big Tank at Central University."

"YOU'LL spend the night in the big tank at South Bend if you're snowing me, Sonny," he said. "Let's see your driver's license." I got my billfold out of the glove-compartment — a chastity-suit doesn't have any pockets — and handed my license to Bjornson. "John Bogardus, M.D.," he read. "You're a doctor, eh? This says you live at BICUSPID, Central University, South Bend. What's that BICUSPID, Doc? Means your practice is limited to certain teeth?"

"I'm a resident in pathology, and I'm damned near out of air," I said, annoyed at the prospect of suffocating while acting straight-man to a state cop. "BICUSPID is the acronym for Bacteriological Institute, Central University Special Projects in Infectious Disease. I'm a Lapin, which is a human guinea-pig. I'm sorry, officer, that I broke the Indiana speed-limit but my air-filter is clogged with condensation. If I don't get back to the Big Tank at the University within the next few minutes, I'll run out of air. And you'll have to spend the rest of the evening testifying before St. Joseph's County Coroner."

"So what happens if you crack open your space-helmet and breathe the air us peons use?" he asked.

"Pretty quick, I'd die," I said. "I've got no antibodies, no physiological mechanism to combat inspired or ingested bacteria."

"That's the sort of answer that makes my job the joy it is," Bjornson said. "Next thing you know, I'll be chasing drunken drivers from Mars."

"There's no intelligent native life on Mars," I said.

"You think maybe there are intelligent natives on U.S. Twenty?" he asked, returning my license. "Okay, Doctor Bogardus, I've bought your story. You leadfoot your bomb along after me, and we'll hit the Central campus like we're crossing the payoff line at the Mille Miglia." Bjornson cowboyed into the saddle of his bike, spurred it off and cut siren-screaming down the concrete toward South Bend and Central U. I jumped back into my sports-car and tailed him, the wind soaring past my 'phones like rocket exhaust. We cut through the field of Sunday drivers in a horizontal power-dive. I was half-blinded by the sweat condensed on my air-cooled faceplate. Formaldehyde bath or no, I'd have to cut in my reserve-air pretty soon.

WE made it while I was still breathing. I braked in front of the BICUSPID entrance and walked as fast as I dared, dizzy and panting with the concentration of CO_2 bottled up with me in my chastity-suit. Outside the door to the contaminated labs, I shook Bjornson's hand and told him that I considered the expense of my Gross Income Tax justified by his employment. I went inside then, climbed the steel steps to the glass-walled shower. I cut in my suit-radio and announced my arrival. "Bogardus here. I'm nearly out of wind; my filter's soaked. I'm cutting in reserve-air. Anybody around to see that I scrub behind my ears?"

Dr. Roy McQueen, Director of BICUSPID, came out of his office, where he'd monitored my announcement from the loudspeaker set above his desk, and faced the glass door of the shower room. He waved to me and cut on his microphone. "Okay, Johnny," he said.

I sealed off my air-filter and cut in the reserve-air. That canned wind felt to my lungs like cold beer to the throat on a July day. I felt the oxygen percolating through me to my toes and fingertips, tingling them back to life. Turning on the detergent shower, I sloshed around beneath it, washing the outside dust off my chastity-suit.

"You're dry by the tank," Dr. McQueen said into his hand microphone.

I picked up the long-handled shower brush and scrubbed back there. I showered the suit's armpits, the folds behind the knees, the soles of the suit's boots, scrubbing hard with the brush. "You're all wet, Johnny," the Chief said.

"Got enough air for half an hour in the bathtub?"

"Yes, sir," I said, checking the gage of my reserve-air tank. Having scrubbed off most of the flora I'd picked up in the great wild world of Indiana, I climbed down through the manhole into the bathtub, a sump of formaldehyde solution eight feet deep. I sat on the iron bench at the bottom to soak. "How about switching on some music, Chief? I didn't think to bring anything waterproof to read."

"You'll hear music from me," Dr. McQueen said. "This is a big day for BICUSPID, Johnny. It's the first time one of you kids ever came home from a date with a police escort. What happened? Anne's old man decide he didn't want a plastic-wrapped son-in-law? He call the law to throw you off his front porch?"

"My air-filter got bolixed," I explained into the microphone, "so I leaned on the gas pedal pretty heavy on the way home. A friendly gendarme named Bjornson turned up."

"You should be more careful, Johnny. I'd hate to have to post you." Like the rest of us, Dr. McQueen did post-mortems on the germ-free animals who died of old age or stir-fever in the Big Tank, or had to be sacrificed as routine sterility controls. Last winter, for the first time, the Chief had had to autopsy one of us Lapins.

Poor Mike Bohrman had gone off his rocker and stripped off his sterility-suit in the snow. All we wear underneath is a pair of shorts. That's the way Mike had run around, almost naked in a northern Indiana February. It was hours before he'd been missed.

He went to the hospital with severe frostbite, but he died two days later of pneumonia complicated by streptococcal septicemia. "Stick around down there, Johnny," the Chief said. "I'm coming down to join you."

I HEARD him turning the monitor microphone over to one of the technicians out in the contaminated labs. Oh hell, I thought. Here comes a chewing-out that would leave me raw up to the duodenum.

The worst thing about being told off when you've done something dumb is the futility of being told about it. Nobody knew better than I that it was stupid to stay outside the Big Tank for eight solid hours. Hydraulic pressure aside, a chastity-suit isn't designed to hold a man more than about four.

It took Dr. McQueen a quarter hour to get suited up and scrubbed. Then he came down the ladder to join me in the pale green soup, his airhose snaking along behind him like strayed umbilical cord. He sat on the bench beside me. Before he cut in his suit radio, he leaned close and touched his helmet to mine.

"Damn it, Johnny! If you don't stop chasing after that dame in Valpo, I'll toss mothballs in the gas-tank of your silly little car." Then he toggled his radio. "Testing," he said, for the benefit of the monitoring technician listening out in the contaminated labs. "This is McQueen. Someone suited up?"

"Safety man is suited and scrubbing, Chief," the monitor said. "I read you loud and clear. Now, let's hear from you, Brother Bogardus."

"This is John Bogardus, the Voice of Purity," I said, "broadcasting from the bottom of Central University's lovely BICUSPID pool. You want I should dedicate my next record to the gang at the brewery?"

"Happy to hear you testify, canned-goods," the technician said. "The I.U. game is on the radio now. You want me to pipe it to the phones so you can hear our team smear 'em?"

"I'll take your word for it that they'll do that," I said. "My sport is balk-line billiards." Eighty years ago, Central University's gate receipts from football had made possible the first BICUSPID program in gnotobiotics, using mice and roaches and hamsters. Despite this historical tie between me and football, I felt no special affinity for the game.

"Trouble with you, canned-goods, is you've got no school spirit," the monitor complained. "If you or the Chief feel your feet getting wet, just whistle. I'll be here."

"Will do." For all the thousands of times I'd been through this antiseptic drill, I was happy to know that a lifeguard was suited up above our poisonous bathtub, ready to fish either of us out should our suits spring a leak. If formaldehyde-methanol started seeping into my chastity-suit, I knew I'd have an overwhelming desire to undress.

Dr. McQueen cleared his throat, a sound which broadcast very like a growl. "Okay, Johnny. Let's have a synopsis of your Sunday outing."

"IT'S springtime, Chief," I said. "You know what the month of May does to a young man's fancy, and reticuloendothelial system, and all."

"I wish you'd stop seeing her," the Chief said. "You've got fifteen of the most nubile girls in the Midwest living in the Big Tank with you. Sweet, intelligent — available. So why did you have to get the hots for an outsider?"

"It's that ol' debbil incest-taboo, Chief," I said. "I've slept amongst those fifteen canned peaches for the last twenty-three years. The result is that my warmest feeling toward any of them is brotherly love. Who itches to shack with a sibling?"

"Your only alternative seems to be a lifetime of cold showers," McQueen said. "Speaking of

canned peaches, have you seen Mary deWitte today?"

"No."

"Mary has extramural interests, too," he said. "Her intended is a basketball player in pre-Law. A fellow roughly fifteen feet tall. Mary has been gone all day. I presume that she's been visiting this legal obelisk; and I'm beginning to feel the twinges of fatherly anxiety. But tell me about Anne, Johnny."

"I met her at a concert last fall," I said, not giving a damn about the safety man and the monitor kibitzing. "Anne didn't bug at my chastity-suit the way most of the hens on campus do. This impressed me. She liked the way I talked, even though she could hear my voice only from the speaker on the chest of my suit. I liked fine the way she listened. So we had a date. Lots of dates. Said goodnight by shaking hands — Please Excuse My Glove.

"One evening we drove down to the beach at Hudson Lake. As we lay there on the sand, I pointed out for Anne the red disk of Mars. I told her about the men up there, at New Caanan and Bing City and Bitterwater, working to uncover one world while they built a new one. I told her about the mystery of the Immermann skull, and what it might mean. I pointed to the stars and named them for her. All the time, Chief, I knew that I could touch Betelgeuse or Phobos as easily as I could touch Anne.

"Anyway, we went swimming together, just like we were in Technicolor and VistaVision. I screwed the cap on my air-filter and breathed from the reserve tank. Anne wore a bikini. I might as well have been aboard a midget submarine. After that evening, we decided not to go swimming any more; and Anne started wearing strict and conservative clothes."

"What happened today, Johnny?" McQueen asked me.

"What could happen?" I demanded. "We broke up. She's contaminated, poor girl. She's been aswarm with bacteria and yeasts and molds and miscellaneous protista ever since the obstetrician slapped her on the rump, while I'm Boy Galahad, fifty-six one-hundredths percent purer than Ivory Soap. My strength is as the strength of ten, so I told Anne at noon today that she'll have to find herself a new boy friend. She needs a guy who can eat the other half of the pizza with her, someone who can lend her his comb and breathe the air she breathes. It took me weeks to steel my soul to the prospect of kissing Anne off — there's an ironic metaphor for you, Chief — but I did it."

"I'm sorry, Johnny," McQueen said.

"I'm afraid I've diluted the antiseptic with my tears," I said. "Just singing those old formaldehyde blues."

I'd soaked for the regulation half-hour now, and the gage of my reserve tank was on red, so I got up to go. "I can see myself at ninety-five," I said. "I'll be patriarch of the Big Tank. The oldest male virgin on campus. See you inside, Chief."

I climbed up the ladder through the second manhole over the formaldehyde sump and stepped out into the sterile precincts of the Big Tank. Home.

I STEPPED into a shower-booth, let the water blast the formaldehyde off my chastity-suit, popped off my helmet and stripped. Air against sweat-steamed skin felt good. I showered again, naked. I blotted myself dry and dressed in fresh shorts, all the clothing a man needed in the air-conditioned Elysium of the Big Tank. I carried my suit into the locker room to refit it for my next trip outside. Snapping its collar to the bushing of the compressed-air supply and turning on the pressure, I inflated my suit so that it stood on its headless shoulders, ready for inspection.

The wet air-filter that had almost asphyxiated me had been caused, I discovered, by a break in the moisture-trap of the unit. Careful checking assured me that the filter had failed-safe bacteriologically. No outside bugs were in my suit. I might have suffocated, but my corpse would have remained uncorrupted. Such a comfort.

I replaced the trap and filter with a fresh unit and fit a charged bottle of air onto the back of the suit. Then I gave every inch of my chastity-suit an inspection for worn spots, for bubbles forming on its moist surface — an inspection as painstaking and as sure as a window washer's check of his working harness, or an exhibition jumper's folding of his parachute. Satisfied that the suit was all set for my next adventure into the world of normal, septic human beings, I racked it and the helmet in my locker and walked out into the garden.

There I stretched out on the grass under the ultra-violets, refreshing my tan while I waited for Dr. McQueen to come up from the sump.

The garden was my favorite room in the Big Tank. It was in establishing the garden that I'd discovered that my Machiavellian mind is articulated to a pair of green thumbs. The crafty bit came over coffee in the cafeteria. I, of course, just sat there to listen and talk; not even C.U. Cafeteria coffee is aseptic enough for a Lapin to drink, even if there were some way to get a cup of the stuff inside the helmet of a sterility-suit. Anyway, I chided these two graduate students from the botany department about the research possibilities they were missing by not growing any gnotobiotic green stuff. I gave them the Boom-Food pitch. Would

cabbages, grown in an environment free of bacteria, grow large as king farouks? I hit them with the Advance the Frontiers of the Biological Science line: could soil-nitrates be utilized by legumes in the absolute absence of *Nitrobacteriaceae?*

THE two botanists leaped to my vegetable bait like a brace of starving aphids. A couple days after I'd commenced my con, three tons of quartz sand were shipped through the Big Tank's main autoclave. The lifeless stuff was poured over a grill of perforated pipes. The pipes were connected to a brew-tank of hydroponic juices, and the wet sand was planted with germ-free seeds of grass, tomatoes, carrots, and other useful herbs. We Lapins had a ball, planting the aseptic seeds in the dirtless dirt eagerly as a band of ribbon-hungry 4-H'ers. What had been our sun-room blossomed, after a decent period of germination, into our lawn and garden.

For some reason, the garden of our Eden never got an apple-tree. But we did have lettuce on our sterile sandwiches now, and fresh tomatoes, infinitely superior in texture and taste to the "radared" fruit — almost pureed by the high-energy beams that made it germ-free — that we'd grown up on.

The lesser mammals with whom we twenty-nine Lapins shared the Big Tank, the rabbits and guinea-pigs and hamsters and like small fowl, didn't go much for fresh vegetables, having developed a palate for an autoclaved diet. The monkeys, though, proved to be real competitors for carrots and raw sweet corn. They had to be locked out of the garden, rather as certain of their disobedient relatives had been.

I reached out from my supine, sun-drenched position to pull a turnip. I shook off the moist sand and wiped the hydroponic wetness off my shorts, to munch grittily while I waited for the Chief to join me.

As soon as he'd soaked in the formaldehyde mixture for half an hour, Dr. McQueen came up through the manhole. Under the shower he squirted the chemical B.O. off his modified sterility-unit, then came out into the garden to join me, dragging his air-hose. We sat side by side on the park bench I'd built beside the onion-patch. (I was fond of my onions. They were the only living things in the Big Tank with the honest stink of life to them). "Where did you plant the marijuana, Johnny?" the Chief asked me. His voice was muffled by the wetness of his suit-speaker.

"Now, there's a pregnant idea," I said. "We won't plant muggles, Chief. We'll plant tobacco. All we Lapins need to keep us happy is a good solid vice like smoking." I looked at the Chief. "Why'd you



follow me here, Dr. McQueen? I know I've been naughty."

"Self-pity doesn't became a man, Johnny," he said.

"And why the hell not?" I demanded, my blood-pressure ready to challenge any manometer in sight. "If I can feel compassion for some poor joker on TV, why can't I hurt a little for myself — for John Bogardus, swaddled from his darling by a damned plastic diving-suit? I was — I am — in love with Anne, Doctor."

"Your marriage-night would kill you, John," he said.

I JUMPED up with ready-made fists, then flopped down onto the grass, laughing at the picture I saw. Battle of the Century. In this corner, wearing helmet, chastity-suit, and thirty-five feet of air-hose, Roy McQueen, Ph. D. In the far corner, clad only in brown trunks (grass-stained on the seat, folks), John Bogardus, M.D. "It makes a grand old dirty joke, doesn't it?"

"It makes a painful reality," Dr. McQueen said. "I know how you must lie awake nights, thinking about gradually acclimatizing yourself to the contaminated world in which Anne lives. You know, though, that the death-rate with the lower animals who've tried this acclimatization is steep. Even the survivors don't survive very long, because of their low gut-tone and their tardy antibody response. I suppose, though, that the imminence of death is as helpless before love as the locksmith." Dr. McQueen sighed. "If it's what you want, Johnny, I'll ignore everything we both know about the probable consequences and help you break out of here . . . Think how embarrassed you'd feel, though, if you died of a *B. subtilis* septicemia or a fulminant chicken-pox the day before the wedding."

"I could have married Anne, and made her either an unkissed bride or an early widow," I said. "Neither of these alternatives struck me as an attractive career for the woman I love, so I left her. It's so logical it's practically simple arithmetic. Anne put up a fight to keep me, Chief; it was most warming to my amour-propre. Women aren't logical like us men of science. What a stinking situation!"

"It is," Dr. McQueen said. "But remember, John, lovers outside the Big Tank often get just as star-crossed as you and Anne."

"And they have dental caries to contend with, which we don't," I said. "Somehow, Chief, we'll get this experiment into its second generation, past the miseries of the gnotobiotic first-born, we Adams and Eves who were delivered into purity by aseptic Caesarian section. Maybe we'll have to toss coins or draw cards to pair up for parenthood. But any kids we raise will be spared that indignity. Know how I've got it figured, Chief? We've got to make provision for exogamous matings, right? Novelty, in other words, is essential to romance. Here's the way we'll work it. We'll set half the babies, boys and girls together, on one side of a wall, half on the other side. We'll have established two tribes of kids, each growing up in ignorance of the other; and we'll keep them strictly apart till they're in their middle teens. Then, maybe the night of the Junior Prom, we'll cut a doorway in that wall and introduce them to each other."

DR. McQueen smiled. "That will be a splendid evening, John. And a situation to make an anthropologist's mouth water. You may have found the answer to one of your children's major problems. I only wish we had as simple a solution to the current troubles of John Bogardus."

"Don't blame yourself for what's happened to me," I said. "I've carried on pretty bad today, but that doesn't mean that I or any of the other Lapins blame you for causing us to be birthed into the Big Tank. It had to be done. Once Dr. Reyniers had made gnotobiotics possible, a colony of germ-free humans became available. You did a good and honest job of bringing us colonists up, Chief. As good a job as anyone could do."

"Thank you, John," he said. "I often wonder, though, whether the Nuremberg Principles really gave us the right to build and populate this germless microcosm. We told your mothers when they volunteered that the results of raising humans gnotobiotically would be important. They have indeed. Thousands of lives have been saved by what we've learned here. We saw to it, as we'd also promised your mothers, that your health hasn't suffered by reason of experiments, that you've been given the education you need to earn a good living, and especially that your dignity as human beings has always been respected. The core question is, did we have the right to involve fellow humans, not yet born, in a process the end of which we couldn't entirely predict? Enough of this, though. My conscience is my own problem. For your immediate relief I can offer only: keep busy."

"Work is dandy, but liquor's quicker," I said. "A wound of the heart calls for a therapeutic drunk."

"I'll honor your prescription, Doctor," the Chief said. "The moment I get outside, I'll Seitz you some of my own Scotch." He stood up and caught hold of his air-hose. "Forgive me for behaving so like Pollyanna, John," he said. "I wish I could offer you relief more potent than Scotch and sympathy."

"Such spiritual Band-aids are all the help there is, Chief. Thank you for them."

He slapped me on the shoulder with his gloved right hand, then walked through the shower-room, trailing his black air-hose, and dropped down the manhole into the formaldehyde sump on his way back out into the world.

I sat on my bench in my artificial garden in the middle of the great steel womb I'd been delivered into, and I thought about my Anne.

"IF I had a chisel and about four tons of Carrara marble," the girl standing behind me said, "I'd hack me out a statue on your model, and call it *The Thinker.*" Dorothy — the Firebird — Damien plumped her little backside onto the bench beside me and scintillated eagerness to converse.

I didn't want to talk to anyone at the moment, certainly not to the Firebird. To employ a metaphor from an appetite less exalted than love, seeing the Firebird after losing Anne was too much like being offered hamburger after having had a filet mignon snatched from under nose.

Still, as my peripheral vision took in the Firebird's brilliantly distributed five-foot-three, I realized that my metaphor was false. That flame-colored hair and impish, freckled face; that halter taut as a double-barreled ballista cocked to fire twin rounds; I turned my attention to the girlscape beside me, quite innocent of covetousness, my interest purely aesthetic. No hamburger, this. Firebird Damien was filet mignon.

But she wasn't Anne.

Suddenly I was contrite toward my fellow captive. "You're looking splendid, Miss Damien," I said.

"And you got a face peeled off the iodine bottle. Tell mamma where it hurts."

"Don't delve, doll."

"Woman-trouble?" she asked.

"The term is tautological," I said. "*Woman* and *trouble* are synonyms. If the language had any logic the words would rhyme."

The Firebird put a freckled arm across my shoulder and squeezed my deltoid with her resting hand. I shrugged. "Don't try to shake me loose, Johnny," she said. "I'm trying to find out what sort of people you are. Whether you're a Shrinker or a Flesh-Presser."

"Obviously, you're of the Shrinker persuasion," I said.

"Hoo-hah! Shrinkers are the other race from me," the Firebird said. "They're the people who quail at shaking hands, who never slap a back nor playfully pinch. They hate to be crowded, don't like to be touched. My sort of people, though, tend to cuddle like puppies, or like cattle in a thunderstorm; we take comfort in the closeness of other humans. We're not erotic about this, Johnny. Not necessarily erotic, I mean. We have our moments, too, or the Shrinkers would long since have taken over the world in spite of their dreadful handicap. We're the people who make brilliant barbers. The kind who say hello to you with a Roman handshake and a clasp on the shoulder. We're the doctors with the healing touch, the most tender nurses. We're the Flesh-Pressers." She gently squeezed my shoulder-muscle again to demonstrate. "Tell me what's the matter, Johnny. Maybe I can help."

"NO magic touch will cure my trouble," I said. "Anne and I are through. It was hopeless. I was like the goldfish in love with the cat. So I called our romance to a halt today and drove home in my little green sports-car, feeling a little green and hardly sporty at all. Please don't mention this again, Firebird; not till I'm old and bald and my wound has healed to a thin white scar."

"Can I say one thing?"

"You will, so do."

"I'm really sorry, Johnny."

"Thank you, Firebird," I said. "The Chief promised to send some therapeutic juices through the Seitz filter. If you've a mind to sample a little sterile White Horse, perhaps tie one on with me this evening, you'd be most welcome."

"I'll be proud and happy," the Firebird said. She scooted even closer.

I found her propinquity not at all unpleasant. Was I perhaps of the Flesh-Presser clan myself? The girl smelled good, the faint wholesome feminine odor of my Lapin foster-sisters — a perfume an outside wench, host to a universe of bacteria, could approximate only with Pepsodent and the most meticulous attention to her underarms, I gather from TV.

"How am I to entertain you, sir?" the Firebird asked me. "I have current gossip, vintage scandal, clever anecdotes lifted from the steaming pages of my autoclaved *Reader's Digest*, imitations of birdsongs — heavy on the mating-calls, these — and sheer adoration." She paused. "Scratch that last offering, Johnny," she said. "It's unhygienic for a girl to wear her heart on her sleeve, even here."

"I've lost touch with the Big Tank social whirl these last few weeks," I said. "I've been spending all my alive-time in the greater world of Valparaiso, Indiana. Bring me abreast of the local gossip, Firebird, if you please."

"Gladly. First there's the case of Mary deWitte. She's still on the trail of her basketball star — a fellow named Lofting — confident that somehow they'll manage to compromise her hateful purity . . .

Maybe I shouldn't have mentioned Mary," she said, seeing that I was frowning.

"I was just thinking," I said. "Miss deWitte and I might get together to establish an Amour Anonymous group in the Big Tank."

"If you do, Johnny," the Firebird said softly, "write me up a card as a charter member."

"The Chief was talking about Mary deWitte only a few minutes ago," I said. "Hasn't she accepted the fact that we Lapins can't hope to breed with those jungle weeds outdoors?"

"Have you accepted that fact, Johnny?" the Firebird asked.

"Apt question," I admitted. "Sure. I've decided that Anne is as unavailable to me as Mars is. I don't know which makes me more bitter, Firebird; losing Anne or being denied the chance at the stars. Now that the solar system is getting man's footprints all over it, now that the Orion ships are slamming out to Mars and back on a busline's schedule, and the biggest ship of all is being fitted for deep space at the back of the moon, the constellations don't seem much further off than Chicago. But not for me."

"You think you're bitter, bud, you should hear me with my hair down," the Firebird said. "But we've had dirges enough for one evening. Your whiskey should be filtered through by now. Let's go wet our Scotch apéritif, and have dinner."

"I'm not hungry," I said. "I just ate a turnip."

"Will turnips make you big and strong? You need solider food, like Scotch. That's my professional opinion, Doctor." She got up and tugged at my hand. "Come on, Johnny. I'm not about to let you sit here all evening and brood."

"Is this your prescription, sweet Firebird?" I asked. "That I'm to go back to the madding crowd, mingle with my twenty-eight fellows in aseptic togetherness? Well, you're probably right." I got up from my park-bench to walk with her, hand-in-hand, to the dining room, stopping en route at my room for a shirt. Dinner was a formal affair in the Big Tank, shirts for the gentlemen and shoes for all.

THE other Lapins were already eating. They greeted me and especially the Firebird with jokes and fellowshippy sounds.

I felt very much at home with them. There was Bud Dorsey, our weight-lifting astrophysicist, his magnificent u.v.-blackened body a study in the surface musculature of the human male. At his table was Karl Fyremeister, who has a practically complete collection of the airmail stamps of the world to console him on long winter evenings. All the stamps are quite sterile. Karl was talking with Gloria Moss, whose academic specialty was group dynamics. She demonstrated muscular dynamics so attractively that when she walked about the campus in her chastity-suit she drew whistles, a truly remarkable accolade when you consider that the c-suit is somewhat less faithful to the wearer's form than a poncho. Keto Hannamuri sat the four-place table with Bud and Karl and Gloria. He was my fellow-medic among McQueen's Beasts, a pediatrician. Kids loved him. Wearing his sterility-suit as he made his Ped Ward rounds, that Oriental smile showing through the faceplate of his mask, Keto seemed to the television-nurtured youngsters the very model of the friendly extra-solar alien, complete with space-suit. Besides his flair for showmanship, Keto was a remarkably fine doctor. As we passed his table, he slapped the Firebird's short-shorted callipygia in a kinship-gesture of the Flesh-Presser clan.

I felt a sudden overwhelming love for all these people, my brothers-and-sister-in-exile. I took my tray to sit down quick with the Firebird before my reserve, depleted by the emotional beating I'd taken at noon, gave way.

The menu featured radared steak. The meat was germ-free and somewhat tenderized by the high-energy beams. (A purist in culinary proteins might go so far as to say denatured.) The nearest any Lapin came to ingesting a bacterium was here at the table, where we ate billions of bacterial corpses. The bugs achieved a post-mortem revenge by triggering the production of faint bacterial antibodies in our blood.

Besides the steaks and the myriads of murdered microbes, we had an aseptic salad prepared from Tank-grown hydroponic vegetation, dressed with Roquefort, the cheese that vies with penicillin in my private hall of fame as the noblest product ever a mold gave man. The Scotch that Dr. McQueen had promised to send was on hand, Seitz-filtered into a sterile White Horse bottle. Not really caring to dilute my poignancies with alcohol, I passed the whiskey among the tables nearby.

THE Firebird was managing to stay quite close to me, though technically remaining on her own side of the table, eating and talking and now and then flashing me such a glance of yearning that I was pierced by the sight of her and by a remembered line of e. e. cummings's: ". . . your slightest look easily will unclose me though I have closed myself as fingers . . ." Just as suddenly, I realized that mine was a highly pathological state of mind, the rinse-phase of the brain-wash. Autism can be

produced as surely by loneliness or unrequitable love as by injections of LSD-25.

So I turned my attention to my environment, consciously flexing my muscles of mental health. I answered the Firebird's sallies with automatic flippancy. I ate my steak, savoring its flavor. And I looked about the dining-room, examining it as though I'd never eaten there before.

The Lapins' dining-room in the Big Tank is about the size of a railroad restaurant car. (Not that I've ever been aboard a train to make the comparison. The stringencies of the sterility-suit tie such of us to the Big Tank on a short leash: the most sanitary of outside washrooms would prove a pesthole to a Lapin.) The kitchen, which was under the supervision of the Firebird, our dietitian, could have been squeezed into a telephone booth. It served chiefly as receiving-station for the autoclave and the radar-room, through which all our food came. With its ten little four-place tables, each covered with a gypsy red-checkerboard cloth, set with a green glass vase of Tank-grown daisies, our dining-room was friendly enough. The Tank-ness of it, though, was emphasized by a mural along one wall, a fantasy of stars and men and microbes that half a dozen of us had planned and painted one week. Where the mural was now had once been a picture window, overlooking a green stretch of Central campus, a source of comfort to us all. An Air Force jet, though, pulling out of a dive invisibly above us, had sonic-boomed a crack in both panes of the double glass of the window, causing a general alert as we realized that some airborne *Proteus* or fortunate *Staphylococcus* or lonely *Aspergillis* might have invaded our fortress through this almost microscopic breach in our walls.

Careful decontamination had saved our sterility, but now the Big Tank had no window.

"I was saying . . ." the Firebird said, in a firm voice.

"Sorry, doll. You were saying?"

"That Mary deWitte isn't here. Do you suppose she's still outside? She checked out her sterility-suit about the same time you did."

"That's a good nine hours ago," I said, glancing at the clock set over Saturn on our mural. "Either Mary has been on a restricted-fluids diet, or True Love has made her careless of visceral discomfort."

"Don't be coarse, Johnny."

"The demands of the kidney are as exigent as those of the heart, Firebird," I said. "I think I'd better call Dr. McQueen."

"You'll only cause trouble for her and Lofting," Firebird said.

"I've decided that it's better to be lovesick than dead," I explained, getting up from the table.

I WENT to the phone in the corner of the dining-room and dialed Dr. McQueen's home. "Chief? John Bogardus. Mary deWitte still hasn't come home to roost. I think we'd better find her before she does something splendid and foolish."

"Like perhaps marrying her contaminated basketball-player and setting out on a suicidal honeymoon?" Dr. McQueen suggested. "You're right, John; we should prevent that sort of thing. The rub is, we're too late. I got a phone-call from Mary a few minutes after I got home this evening. She abandoned her sterility-suit in a downtown Chicago hotel room at noon today, and married her fledgling lawyer in a civil ceremony at one o'clock. I tried to find out from her where she was, but she just said she was very happy and hung up."

"Hell! What are we going to do?"

"I'm flying to Chicago, where I'll ask the help of the police in finding Mary," the Chief said. "Once I've run down the happy couple, though, damned if I know what I'll do next. Shall I stand outside the bridal chamber with a syringeful of broad-spectrum antibiotics, waiting for Mary to sneeze?"

"They'll have a short marriage," I said.

"Mary knows how likely it is that she'll never grow old," Dr. McQueen said. "But I suspect that she hasn't said a word to her husband. I'd better go now, John. My plane leaves in twenty minutes."

"Don't let this prey on you too much, Chief," I said. "We Lapins have free will, too. We're old enough to bear the responsibilities for our own actions."

"Thank you, Johnny." Dr. McQueen hung up.

I returned to the table with no enthusiasm for the remaining half of my steak. "What's up, Johnny?" the Firebird asked me.

"Now we are twenty-eight," I said. "They were married in Chicago at one o'clock."

"How wonderful!" the Firebird exulted.

She stood and pounded our table-top with the vase, scattering damp daisies on the cloth. "Quiet, everybody! I've got an announcement." The chatter over dessert simmered down. "Mary deWitte got married today — here's to the bride!" Firebird slopped two ounces of White Horse into her glass and downed them at a heroic gulp. She sat, sputtering. The chatter at the other tables crescendoed as our colleagues reminded one another of the significance of the Firebird's news.

"Will you also propose the toast at Mary's wake?" I asked.

"WHAT a hideous thing to say!"

"It was, Firebird," I said. "Forgive me, please. This thing has left me in a wounding mood."

"Is Mary really in such danger?" Firebird asked.

"She may last a week, not much more. Today she'll meet *Klebsiella,* probably; perhaps *E. coli* and *Shigella.* Pretty soon she'll start to sniffle with the first common cold she's ever experienced. Polio virus and the ECHO group may get to her first, and establish themselves before there is sufficient growth of bacterial flora to give them competition. Her intestinal walls are thin and weak, so she may suffer megacolon as a result of gas-producing fermentation. From a pathologist's point of view, I'll find it most instructive to learn the manner of Mary Lofting's death. From the standpoint of a friend and fellow Lapin, though, I'll think her death a damned shame."

"I'm getting a little drunk, Johnny," the Firebird said, "and a little maudlin. So, say you're right. After all, you're the doctor and I'm just a dumb dietitian. But don't you think maybe it's worth while, what Mary's done? Condemning herself to die, I mean, because she's really in love, and death is what she's got to pay for a few days' happiness. Don't you think the price is fair, Johnny?"

"If I did, I'd be paying it," I said . . . "No, Firebird. Seizing a little love and poetry before the sacrifice is great stuff for epics, but it doesn't make much sense to me. When I'm married I'll want to see my children all the way through Spock and Gesell. I'll want to grow old with my wife, if you'll excuse the corn."

"We Flesh-Pressers have a natural reverence for corn," the Firebird said. "It's part of the syndrome. Johnny, if you really want what you just said, want those things badly enough to set up a marriage on half a love, give me a call. Anytime. Even though I don't set your blood aflame." She stood up, a little unsteady, and rubbed her hand across her eyes in a tardy effort to hide tears. "Save the brushoff till tomorrow, Johnny," she said. "Goodnight."

"Goodnight, sweet Firebird," I said. She turned and walked quickly from the dining-room.

Bud Dorsey, our weight-lifting astronomer, left his three companions to bring his coffee over and sit with me. Bud was the Lapin who'd have been a Central U. fullback as an undergraduate, if only Dr. McQueen had let him play the game in a chastity-suit. "What will happen to Mary deWitte, John?" he asked.

"She'll die," I said.

"One flight in the sunlight, then her wings fall off. We Lapins are a fragile race. May I?" I nodded. Dorsey poured some of the Scotch into Firebird's empty water-glass and sipped it.

"THE men who devised the Nuremberg Principles failed us when they forgot to underwrite the romantic aspirations of human guinea-pigs," I said. "As a result of their oversight, it seems that McQueen's Beasts have made a bigger contribution to sociology than to bacteriology. We've demonstrated that familiarity doesn't breed. Here we are, now, fourteen pairs of healthy Americans in their middle twenties, and neither a marriage nor a pregnancy amongst us. Why?"

"Tell me, John," Dorsey said.

"I'll tell you why," I said. "It's because we're fond of our foster-sisters, but we're also a little bored with them. And they with us. We men know every canned peach's flirtations and frailties and conversational gambits so thoroughly that one of us could no more marry one of them than the average outsider could marry his kid sister."

"Even that's been done, John, just for principle's sake," Dorsey said. "The Pharaohs wed their sisters because no one else was exalted enough for the honor. Our predicament is not dissimilar. The primal urge, John, will in time overwhelm the curse of contiguity."

"Could be," I said. "But it's not just sex that's agonizing me, Bud. Prison has whole constellations of frustration. However warm and understanding our guards may be, this is still a prison, and half of us are stir-crazy. Why did Mike Bohrman take off his chastity-suit last winter, to walk barefoot through the snow with only his suit-shorts on, till he collapsed from the cold? It was a prison-break, Bud. So was Mary deWitte's witless marriage. They were both suicide, the lifer's one way over the wall."

"Stir-crazy?" Dorsey asked. "You're exaggerating, John."

"Open your eyes, Bud," I said. "Look at Karl Fyrmeister's hands, for example. I'm violating no medical confidence to tell you that Karl got his dermatitis as the result of compulsive hand-washing. There's a fine neurotic symptom for a germ-free Lapin! If I'm exaggerating our collective un-sanity, Bud, tell me why Lucy Cashdollar has become an apprentice alcoholic. Why does Fizz Ewell, with an I.Q. that must range in the 150's and the most brilliant record the Nuclear Engineering Department has ever seen, spend

six hours a day working crossword puzzles? Why do you have that tic of your left orbicularis oculi? Why am I an insomniac, with a nasty barbiturate habit? Look around, Bud. You'll see that our little home has turned into something of a snakepit. Our neuroses are only garter snakes so far; but they'll grow into cobras, given time and further frustration to feed on."

DORSEY'S left eye twitched as though my mentioning his tic had triggered it. He self-consciously raised his fingers to the vellicating muscle, more to hide than to soothe it.

"While our keepers were sending Lapins through every major discipline offered on the campus," he said, "it seems they'd have done well to have trained one of us in psychiatry."

"For what?" I demanded. "So we could have someone right here in the Tank to spoon out our soothing-syrups? Man, we've got a right to be stir-crazy. We're life prisoners and we've committed no crime." I stopped to get my calm back. "Bud," I asked, "do you know what I want more than anything else, next to Anne?"

"Of course I do," Dorsey said. "Like you've pointed out, John, we've got no secrets from each other. Your big itch is to step aboard one of the Orion ships. You want to join up for the chase after interplanetary white whales."

"It's only natural," I said. "When we were kids, Bud, we saw the same TV programs, the same space-adventure movies, as the kids who are now the men in space. Every boy in America was conditioned to long for a space-suit. I'm one of the ones who could have made it, Bud. I love medicine, and I think I'm going to be a damned fine pathologist; but I'd turn in my M.D. for an Ordinary Spaceman's ticket without a second's hesitation. When I read, two years ago, that Immermann had discovered that human skull in the oxide rubble below Roosevelt Ridge in Syrtis Major, I cried for the first time since I was six years old. Twenty thousand years ago there was man on Mars. And I'm confined to Earth for life."

"How much do you know about the Immermann skull, John?" Dorsey asked me.

"What I've said. Is there more?"

"One point," Dorsey said. "My field, radio astronomy, is a deep-space sort of specialty; but I do from time to time condescend to read the *Journal of Aerology* and the other parochial, solar-system publications. Somewhere I read that there's something odd about that skull Colonel Immermann dug up."

"If you're suggesting that it was a second Piltdown hoax, planted in that Martian talus to jar larger Air Force appropriations from Congress, keep it from me," I said. "I cherish the illusion that the Immermann is genuine, and a mystery."

"IT isn't phony, and it's sure as hell a mystery," Dorsey said. "Colonel Immermann's initial report of the skull's discovery was verified by every member of the *Orion Gamma's* crew, a gang recuited mostly from Service-Academy grads and other high moral types. The peculiarity I'm talking about isn't forensic. It's functional. If you were to mix in the Immermann skull with an assortment of skulls of modern western men, age forty or thereabouts, only one characteristic would allow you to pick it out from the mixture again. 'Look, Mom—No Cavities!' Like us Lapins, Immermann Man had acarious teeth."

"Because he was germ-free?" I suggested.

"It's possible. Or his medical science may have gotten oral bacteria under control with drugs. Maybe he preserved his teeth by diet, or with fluorides in his drinking-water. Perhaps his mother never let him eat candy when he was a kid," Dorsey said. "Who knows? Good teeth and all, though, our Immermann Man died twenty thousand years ago. Why? Was he germ-free, as you suggest; and was he killed by some species of Martian micro-organism that's since gone extinct from drought and a shortage of hosts? The big question, to my mind, is why none of our explorers has yet found any sign of the rest of the expedition."

"Expedition?" I asked.

"A man could hardly have been alone on Mars," Dorsey said.

"From where?"

"Pick any 'F'- or 'G'-type star with planets," Dorsey said. "After all, it's easier to posit extrasolar man than to suppose a flint-drive spaceship was devised by some early neolithic von Brauns."

"I'd never expected to see an astrophysicist take off on such a flight of improbabilia," I said.

"John, would you like to hear a thread-recording I just got from the radio observatory at Adelaide?" Dorsey asked.

"Hi-fi?"

"The radio sky is strictly spark-gap quality, no fi at all," Dorsey said, getting up to lead the way from the dining-room. "This transmission you're going to hear doesn't have anything to do with the ordinary 21.12-centimeter neutral-hydrogen radiation; but of course you realize that our big paraboloid bowls can catch anything from hydrogen hiss to low-flying bats. Remember the Christmas celebration at New Caanan that was telecast to earth a couple years back? That show was caught by the six-hundred-foot receiver





at Green Bank, West Virginia, and rebroadcast by C.B.S."

IV

We entered the Big Tank's common room, where a few of our colleagues sat reading or writing notes for tomorrow's classes — talking; playing chess or bridge; or sitting behind the closed glass doors of the TV alcove watching the picture through stereo spectacles. We entered the alcove at the other end of the room, where the record-player and music library were, and closed the door.

Dorsey took a three-inch spool of magnetic thread from his shirt pocket and fit it to the playback head of the machine.

"I'm interested in your uninstructed reaction, John," he said. "So don't ask me any questions till you've heard the whole sequence."

"Spin it, professor," I said.

The Australian thread had a noisy background, sounding like a dozen rashers of bacon tossed into a too-hot skillet. Over this hissing, the code began to sound. "DIT . . . DIT . . . DIT-DIT . . . DIT-DIT-DIT-DIT . . . DIT-DIT-DIT . . . DIT - DIT - DIT - DIT - DIT - DIT - DIT - DIT - DIT . . . DIT -

DIT-DIT-DIT . . ." I dutifully entered my count of each burst of DIT's in my pocket notebook. The sequence went: 1, 1; 2, 4; 3, 9; 4, 16; 5, 25; 6, 36; then 5, 2, 49; 8, 64. There the count stopped climbing and commenced again with the pair of ones, to repeat the whole set again.

Dorsey cut off the machine. "I've got four hours of the same thing on this thread," he said. "Want to hear it all, or have you got it already?"

"It's obvious, up to a point," I asked. "It's a table of the first eight natural integers and their squares, except for the number seven, which for some reason is split in two."

"It took me quite a while to recognize what happened to that seven," Dorsey said. "Listen to it again." He spooled the thread back and I listened again to the fractured seven: "DIT - DIT - DIT - DIT - DIT . . . DIT - DIT." Then again the forty-nine clicks, seven-squared. Dorsey switched off the player.

"Let's have the distillate of your cerebrations now, Brothers Bogardus," he said, dropping into the deep, red-leather easy chair beside the thread-player.

"It's syncopation, Brother Dorsey," I said.

"I'd never have given my own modest observations so high-flown a title," Dorsey said. "I'd simply have called it, country boy at heart that I am, 'Shave-and-a-Haircut, two-bits!'"

"So it is," I said. "Now we've deciphered that broadcast, and listened to the singing commercial. But I'm still puzzled, Bud. We don't have the sponsor's name and address; and I'm not at all sure I caught the name of his product. What's he advertising?"

"His presence," Dorsey said. "I interpret the message as a simple CQ."

"Seek you?" I asked.

"Yes. Radio-ham code for, 'I'm lonely — will somebody please talk to me?'"

"I'LL accept that interpretation only till I can think of one even more fantastic," I said.

"O.K., John," Dorsey said. "Getting the address of the station was a simple exercise, thanks to my Digger confreres in Adelaide and the men at Harvard's South African radio observatory. We first heard the message two years ago. It's still being broadcast, unchanged. The fist on the key that sent out our arithmetic message belongs to someone in the neighborhood of Alpha Centauri."

"Hot damn!" I said. "But why didn't I know about this? I read *Time*, and all. Why wasn't this headlined?"

"Because it's guesswork," Dorsey explained. "This may be the result of some cosmic coincidence as unrelated to intelligent planning as Bode's Law."

"You'll have to explain that to this groundsman," I said.

"Bode's law, too, looks like an intelligently devised code of some sort," Dorsey said. "Take the series: 0, 3, 6, 12, 24, 48, 96, 192. Add 4 to each number, and divide by ten. The result will be, when you take the asteroid belt into consideration and fudge a little, very nearly the proportional distance from the sun of the first seven planets. Accident, or evidence of intelligent planning? Turned out there are excellent physical reasons for this relationship, reasons old Johann Elert Bode couldn't possibly have guessed. Things like this make astronomers leary of teleology. Make them avoid the splendid guess."

"Go ahead, make a splendid guess," I said. "I won't report you to the Astronomers Union."

"Sure," Dorsey said. "Alpha Centauri, as the U. Cal's five-meter Luna 'scope demonstrated several years ago, has a system of at least three planets. We don't know much about those planets except their time of revolution."

"And that one of them has a citizen clever enough to calculate natural squares and build a radio transmitter . . ."

". . . one hell of a transmitter!" Dorsey said.

". . . and whistle, 'Shave and a Haircut, Two Bits,'" I went on; "which musical interlude argues for a certain degree of conviviality on the part of our Centaurian. This thing of his message, though. Do you think he was just looking for other hams to talk with?"

"THEN he's awfully patient, sending out the same 'CQ' for two solid years," Dorsey said. "It's hardly practical to communicate between stars, John. Broadcasting from here to Alpha C. and back, it would take more than nine years just to ask how's the wife and kids.

"The way it looks to me, our friend out there got the duty of cutting an educational recording to be broadcast automatically to the rest of the galaxy. Kind of a lighthouse, to help his race get in touch with any relatives it might have. That same recording has been played over and over again ever since, sending To Whom It Might Concern its dual message. Simple math — and the most persistent rhythmical cliche known to man."

"What's being done about it?" I asked.

"We've answered," Dorsey said. "A big radio noise on the moon is broadcasting the same message, minus the syncopation, and adding the next two terms; all this beamed toward Alpha Centauri. And two

years ago, the Defense Department cut other programs to the bone to start construction of *Orion Zeta*, the sixth of the big nuclear-pulse ships. She's up in von Weizsäcker Crater on the back of the moon now, John, nearly finished. She's not meant to call at solar-system ports."

"The government thinks, and you think, that our operator four and a half light-years from here was human," I said.

"I can't speak for the government. But that's what I think. Isn't it human to toss notes out to sea in bottles? What's more human than dropping a joke into an arithmetical table?"

"All we've got to do to prove your splendid guess is to highjack a germ-free spaceship," I said. "You and me and any of the other Lapins who feel as we do. We'll go shake the hand — or other prehensile member, if he's not human after all — of our Centaurian thread-jockey. What's to keep our feet in the mud, when our heads are 'way the hell out in a southern constellation?"

"I gather, Herr Doktor, that you jest," Dorsey said. "If you were serious, I'd point out one minor flaw in your blueprint for adventure. It would take our little band of pirates one hundred twenty-five years to get to Alpha Centauri, after we'd stolen the ship. That's with the gas-pedal to the floor."

"I was joking," I said. "I was pretending to be the hero of one of those TV space-operas we used to watch . . . But if I were serious, I don't think a mere century and a quarter would faze me. We couldn't reach our goal in person, Bud; but we could send our children's children. All we'd need to make the trip, if I were serious about my suggestion, would be a few more volunteers. A proper proportion of those volunteers had best be philoprogenitive females."

"DO you think the BICUSPID brass will be happy to see its expensive guinea-pigs taking off into space?" Dorsey asked. "Since '29, John, there's been eighty million bucks poured into gnotobiotics here at Central University. We're the payoff. We can hardly expect Dr. McQueen to stand on the launching-pad, tossing roses and shouting Bon Voyage as we blast off forever."

"I think they could be persuaded to be, if not enthusiastic, at least resigned to our departure," I said.

"It does prisoners good to plot escape-plans, even when they're as obviously fantastic as this one," Dorsey said. "Go on, John."

"As you say, our purpose in this adventure would be to escape," I said. "There's no place on earth that can take us, so we're forced to escape into space. We'll have to talk this up around the Big Tank to see how many want to break out with us. What the sex-distribution of the volunteers is, whether we've got the right range of specialists to man a spaceship. Right, Bud?"

"It's your dream," Dorsey said.

"O.K. Immermann Man appears to have been germ-free," I said. "Perhaps his culture had been gnotobiotic for so long that they'd forgotten the existence of micro-organisms. Landing on other planets, they'd not rediscover the danger of infectious disease till it was too late. Suddenly they'd start falling, dying of illnesses as mysterious to them as the plague was to men of the Renaissance. This may have been the manner in which the original owner of the Immermann skull died, on Mars. We have a reasonable suspicion that there was germ-free human life in our corner of the galaxy twenty thousand years ago. Perhaps, as you suggested, these visitors were members of an exploration party. From Alpha Centauri? Is our ham who hammered out the table-of-squares a member of that gnotobiotic race? Is he our brother in purity?"

"Go on, Johnny," Dorsey said. "You ain't even winded, yet."

"The *Orion Zeta* is being built for deep space," I went on. "Some group from earth is certain to set out in her on the four-generation hop to Alpha Centauri. Would it be morally right to allow this group of ambassadors to be made up of 'normal,' contaminated humans? To carry to a possibly defenseless population a mixed bag of goodies like *Micrococcus ureae, Bacillus vulgaris, Staphylococcus aureus, Mycobacterium tuberculosis* — a whole spectrum of benign and malignant bacteria? Remember, Bud, bugs that are benign or only mildly pernicious on earth might prove to be killers away from home."

"Lots of maybes," Dorsey said. "Lots of perhapses."

"I'VE got one more shaft in the quiver," I said. "This one's got a poisoned point, and it carries the names of our keepers. It's dirty, Bud. It's hardly fair to Dr. McQueen to use such blackmail."

"Blackmail sounds like just what we need," Dorsey said.

"O.K. Thirty of us were born into the Big Tank," I said. "One has already died as a result of his mental state, caused by imprisonment. Another is certain to die within the next few days. Had they been entirely sane, Mike Bohrman and Mary deWitte wouldn't have shed their sterility-suits outside the Tank. Without purpose to their lives, they cracked up.

"Two of us dead in the first twenty-six years of the human studies at BICUSPID," I went on. "Two, out of an original thirty. An

attrition-rate of six and seven-tenths percent. How many more Lapins will wander out to commit innocent suicide in the snow, their minds messed up by the frustration and hopelessness of the guinea-pig way of life? How many more of us will escape from the Big Tank into the morgue? The *Orion Zeta* could be our salvation, Bud. It could give us the sort of purpose human beings must have in order to live."

Dorsey shook his head. "The Defense Department set up its young Clydeside in von Weizsäcker Crater just to build, test, and launch one ship: the *Zeta*. Two years of round-the-chronometer work have been poured into her," he said. "She's cost four billion dollars so far, Johnny; and they haven't bought the living-room furniture yet. I hardly think the generals will volunteer the result of all this effort to serve as psychotherapy for twenty-eight neurotic Hoosiers."

"You miss the point, Bud," I said. "We Lapins were born to crew the *Zeta*. Where else could you find a crew that's already spent twenty-odd years or so inside a box, living together in close quarters, being conditioned against claustrophobia? This Big Tank of ours could be a grounded spaceship, Bud! It's airtight, armored against outside dangers, even has the formaldehyde sump to serve us for airlock. What's a sterility-suit, any way, but a special breed of spac suit? Could you find a better crew than us twenty-eight, skilled in tw dozen professions, young, sound o wind and limb, and willing as hel to take on the job? None of whom will ever have appendicitis, hali tosis, toothache, barber's itch, o athlete's foot? Any one of whom can, in case of accident, first-ai his wounds with a spit-damp hand kerchief, and heal wholesome Man, we're what those generals have been dreaming of! Once we've been trained to aim that big ship and kick her off the back of the moon, we'll be the finest extra-solar crew that ever blasted free of the system!"

"One question," Dorsey said "Where do I sign Ship's Articles?"

DR. McQueen was in Chicago for three days before he found Mary Lofting, née deWitte. She had wakened that morning suffering from a headache, a stiff neck and four degrees of fever. Her husband had called an ambulance to take her to Michael Reese Hospital. There, just before she'd lost consciousness, Mary had asked a nurse to call BICUSPID. The C.U. authorities had in turn called Dr. McQueen in Chicago.

She came home on a stretcher, a bottle of fructose solution dripping into her veins. Mary had already been loaded with a double-barrel ed shotgun-blast of every antibiotic she could safely take. Dr. McQueen rode back to the University in the ambulance with her, and with her husband. Lofting, holding the girl's hand, explained time after time that she'd never told him about the likely consequence of her removing her chastity-suit in an unchaste world. The basketball player said he'd never forgive himself if she didn't recover.

Mary was taken to the C.U. hospital. Wearing a sterility-suit, I attended her examination, which was conducted by my chief-of-service, the staff pathologist, as well as the hospital's internist and neurologist. I took a few cc's of Mary's cerebrospinal fluid back with me to the BICUSPID contaminated labs. There, to anticipate a few days' deliberate bacterial growth in media, her meningoencephalitis was discovered to have been caused by *Erysipelothrix monocytogenes*, an organism whose more usual victims are rabbits. Mary's husband could explain her coming in contact with so exotic a pathogen only by the fact that they'd visited the Brookfield Zoo on the second, and last, day of their honeymoon.

By the time these technical details were known they were academic. The epidemiological problem had become secondary to the pathological. Mary Lofting had died.

I was asked to assist Dr. McQueen and the senior pathologist at autopsy — I was, after all, a resident in pathology, and had besides a special interest in this case — but I found the job more than I could take. Mary had been a sister to me for twenty-three years. In tears, I left the morgue during the classic cruciform incision.

I FOUND the Firebird in the library. I recognized her through the anonymity of her chastity-suit by the characteristic pose of her head and arms as she sat reading: elbow braced on the table-top, her right fist blocked stubbornly against the plastic cheek of her helmet, her left arm curved around the book as though to be a breakwater against distraction. I sat beside her, and said, "Dorothy."

Without a word she closed her book, stood, and replaced it on the shelf. We walked hand in hand out into the autumn campus.

"Last year," I said, "it was Mike Bohrman, walking through snow-drifts in his suit-shorts, wanting for once in his life to feel the real world against his skin. So *he* died. Five days ago, Mary deWitte married the man she loved. So she died," I said.

"Our life isn't generally as hopeless as that," the Firebird said.

"No," I said. "We're fed and entertained. We're being educated at

one of the finest universities in the world — for us, she's been a genuine, homogenized-milk Alma Momma. She even gives us an allowance to buy airmail stamps for our collection, or bar-bells, or gas for our sports-car. She's given us everything we need for happiness. Everything, Firebird, but purpose. That's why we're all going nuts — why Mike went barefoot in the snow and Mary used love for a suicide-weapon. That's why we've got to break free."

"Free?" she asked. "You mean, free to step outside the Big Tank, shed our sterility-suits, turn septic — and die?"

"I mean free to step off earth."

We sat by mutual consent on a bench beneath a sugar maple, brushing aside half an inch of multicolored leaves. I told the Firebird of the broadcast from a southern star, and about the Immermann skull. I told her all I knew about the Orion rockets, the nuclear-pulse ships that had gone through five prototypes to reach the *Zeta*. "She's built to travel light-years," I said. "I'm going with her when she leaves."

"Of course, I'm going with you," she said. "Your spacemen will need a dietitian to make metabolic sense out of algal soups and hydroponic salads for the first couple of generations, and to teach the youngsters to take over the kitchen once they're on their own."

"Firebird," I said, "I'm happy to welcome you aboard. Now we've got to get that ship."

"We'll get it," she said. "Understand, Johnny, it's not the professional challenge that makes me want to blast off for Alpha Centauri with four generations to feed. I've got no special urge to tame frontiers. The reason I'm going — forgive me for mentioning it again, and cold sober — is to stay near you."

I stood up, drawing her up after me, and was struck again by the aptness of the nickname, "chastity-suit."

"Perhaps I've overestimated the effectiveness of a certain taboo," I said. "Come on, sweet Firebird. Let's get back to the Tank to help Bud recruit the rest of our crew."

COLONEL Barrett was young for eagles. My fellow volunteers-designate and I, all twenty-eight of us, were gathered in the lounge of English Hall, creaking and wheezing in our sterility-suits, looking very ready for hard space.

The colonel wore crisp blues. His tunic was decorated by a triple row of medals-for-merit. It was not his fault that he wore no battle-stars. Barrett had graduated from the Air Academy into our seemingly endless *Pax Desperandum*. He'd never had a chance to see a roentgen radiated in anger. The Marsman Badge at the center of his left breast pocket was one rarely seen: the circle-with-arrow symbol of Mars had within it a "III," signifying that its wearer had been a member of the Third Mars Expedition, back in the days when a flight to Mars had been something more than a teamster's run. The Marsman Badge was balanced by the star-topped, laurel-wreathed — and anachronistic — silver wings of a Command Pilot.

As I shook hands with Colonel Barrett I found it difficult to conceal the envy that writhed in me. He'd seen the continents spread cloud-flecked on the receding, curving earth, the stars shining beside the sun against the black sky. He'd splashed across the dust-carpet of the moon, tasted water melted from the polar cap of Mars. As a member of Expedition Three, he'd been with the crew of the *Orion Gamma* when Immermann discovered the twenty-thousand-year-old skull at the base of Roosevelt Ridge.

Colonel Barrett addressed his remarks to me. "Central University," he said, "will lose the results of an eighty-million-dollar investment if you people leave. They'll be getting off cheap, compared to us. The Defense Department has been requested to turn over to you twenty-eight untrained groundsmen the greatest spaceship yet built, the first of the interstellar ships. The *Zeta* cost the taxpayers four dollars a pound to build. She weighs five hundred thousand tons, Dr. Bogardus."

"You're mistaken, Colonel, when you say that the University's investments in gnotobiotic research over the past eighty years will be lost if we Lapins end our part of the experiment. That's not true. That investment has been repaid many times over. More has been learned of human physiology, nutrition, and disease processes in the twenty-six years' study of germ-free humans than was learned concerning these subjects during any similar period in medical history.

"And, Colonel," I went on, "we're not untrained. Bud Dorsey, to your right, is an astrophysicist who worked with the Agassiz Observatory team in mapping the interstellar anti-matter dust clouds. Dr. Keto Hannamuri is a pediatrician. Dorothy Damien, our Firebird, is a dietitian. Fizz Ewell is a nuclear engineer. Karl Fyrmeister's degree is in chem engineering, as is Janie Bohrman's. Gloria Moss is working on her doctorate in sociology. Her thesis, Colonel, deals with the social dynamics of small human groups such as ours. Alfred MacCoy, standing behind you, has written three symphonies and an oratorio so far; and R.C.A. Victor has threaded them all with the New York Philharmonic. Lucy Cashdollar has had her works of sculpture displayed in the National

Gallery and at London's Tate. There are some few resources here, Colonel."

"I didn't intend to belittle your intellectual accomplishments, Dr. Bogardus," the Colonel said. "I've read your dossiers. They're impressive. When I called you untrained, what I really meant was that you're totally unskilled in terms of my own specialty. I meant that none of you knows anything of the skills of simple chemical rocketry, much less the techniques required to lift half a million tons on a nuclear-pulse thrust."

"We can learn," I said.

"I hope so," Colonel Barrett said, "because I've been ordered to teach you."

"WE'RE in?" Bud Dorsey demanded.

"You're in," Colonel Barrett said. "The decision in the Pentagon went against my recommendation that professionals in rocketry be recruited for the Alpha Centauri flight. The generals liked your argument, Dr. Bogardus, that we should send a germ-free ship and a germ-free crew to a possibly germ-free planet. In a sense, this is tradition. Back in the '50s, moon-missiles were sponged down with Lysol before launching, just in case they got where they were aimed at. Our people didn't want to contaminate the moon's surface with earthly microorganisms, cluttering up the picture for the bacteriologists who were scheduled to arrive later. The Chief of Staff said that if there is a germ-free population on one of the Centaurus planets, we must not initiate our contact with them by handing out the sort of prizes Cook's crew brought to the South Seas — measles, tuberculosis, smallpox. We can't know that even innocuous bacteria might not be fatal to a gnotobiotic, alien population. So you go."

"Colonel," I said, "I'm sure that Washington didn't give up the *Zeta* to us out of sheer altruism. What's their real reason?"

"Where else could we get a crew of twenty-eight men and women who've given proof they can live together for a long period of time, peaceably, retaining a fair degree of sanity? Miss Moss's studies in group dynamics were most interesting to the Chief of Staff. Doubtless they did much to influence his decision in your favor."

"There's one thing I don't understand, Colonel Barrett."

"What's that, Miss Damien?" he asked.

"Why is it that you seem so unhappy about our being accepted as the *Zeta's* crew?" she asked. "After all, you've been given the duty of training us to take her between stars. That's a pretty important assignment, isn't it, even for a bird colonel?"

"You're right, Miss Damien," Colonel Barrett said. "My new assignment is a vital one. You must forgive me if I seemed curt and unfriendly." He paused. "I've been trying to hide my feelings, but evidently I failed. You see, Miss Damien, my wife and I had headed the previous list of volunteers — the contaminated crew."

LOOKING from the ports of the rocket that had brought us from Memorial Orbital Station, I'd thought von Weizsäcker Crater the most impressive sight I'd ever seen. The *Orion Zeta* looked from our height like nothing so much as a miniature silver cocktail-shaker, glinting at the center of the vast circle of von Weizsäcker.

Later, standing a few hundred feet from *Zeta's* base, I'd found the order of impressiveness reversed. The great ship was a tower of fifteen hundred feet, blacking out the stars like a geometric mountain; while the crater's twenty-thousand-foot ringwall, so far away in all directions, was no more obtrusive that a decorative hedge. This ship, I thought, is the intelligent comet on which we'd be passengers until the day we died, some two and a fraction light-years away from home. We were guaranteed immortality, though, in our offspring. Our descendants would very literally become flesh of our flesh, bone of our bone, as our bodies were resurrected to vegetable life in the hydroponic tanks of the ship.

We Lapins clustered close together on the moon-dust, staring up the sides of our ship. Her upper reaches were hidden by the globular bulge of the enormous thrust-chamber, where kiloton capsules of nuclear fuel would be fired, three a second, to blast us into space. In this great ship our children would be born and would die, and our grandchildren as well. From the *Zeta*, our aged great-grandchildren, limping down long ladderways to the exit-hatches on the arms of their teen-aged grandsons, would step onto the soil of a planet that circled Alpha Centauri.

One hundred and twenty-five years from now, I thought, clasping the Firebird's hand in mine. So little in history, so big in human lives!

One hundred and twenty-five years ago, the Brooklyn Bridge had been brand-new. U.S. Grant, defrauded and cancer-ridden, was gritting his teeth against the pain to write his memoirs. President Chester A. Arthur had just signed into law a bill prohibiting polygamy in the territories.

As far away as those things lay our goal.

We entered the sublunarian chambers beneath the ship. Dr. McQueen had preceded us here; and under his direction the *Orion Zeta* had been made as aseptic as

the Big Tank itself. Colonel Barrett and his subordinates who'd train us to operate the *Zeta* would have to wear sterility-suits aboard her, and would enter through the formaldehyde sump that was now her only entrance. Even the dust of the moon was not entirely sterile.

The Firebird took my arm to urge me toward the liquid gateway to the ship, eager to see our new home. "Wait," I said, holding her back till all the others had gone through the antiseptic pool.

"Cold feet, Johnny?" she teased me.

"Gloria Moss once told me, Firebird, that a healthy respect for tradition is essential to the organic strength of a group such as ours," I said. "So . . ." I bent and picked the Firebird up, her weight moon-trimmed to that of a three-year-old. She put her arms around my neck as I carried her down the ladder into the poisonous decontamination tank that was our front door to Alpha Centauri.

— ALLEN KIM LANG



By ALFRED COPPEL

Forty million miles is only a step — when the star trail is the road that leads to —

The Hills of Home



Illustrated by DILLON

THE boy on the riverbank was named Kimmy. He was eleven, but he looked younger. He stood as though listening to some distant sound.

There was a tarnished nickel-plated faucet in his hand and a wooden sword had been thrust through the belt of his denim shorts.

The river ran still and deep, gray and green in the eddies, with the smell of late summer rising out of the slow water. The madrone and willow trees stood limp in the early evening quiet.

It wasn't the Russian River.

It was the Sacred Iss.

The sun had touched the gem-encrusted cliffs of the shore of the Lost Sea of Korus and had vanished, leaving only the stillness of dusk and the lonely cry of high flying waterbirds.

From downstream came the faint sound of music. It might have been a phonograph playing a Rudy

Vallee record in one of the summer cabins with names like Pollyann Roost and Stumble Inn. But to Kimmy it was the hated cry of the Father of Therns, calling the dreadful Plant Men to their feast of helpless pilgrims borne into this Valley of the Lost Sea of Korus by the mysterious Iss.

Kimmy shifted the heavy Martian radium pistol into his left hand and checked his harness. A soft smile touched his lips and he brushed a dark fall of hair out of his eyes. He was well armed.

There was nothing he had to fear from the Plant Men.

His bare feet turned upstream, away from the sound of the phonograph, toward the shallows in the river that would permit him to cross and continue his search for Tars Tarkas along the base of the Golden Cliffs . . .

THE Charge of Quarters said, "Oh three hundred, Major. Briefing in thirty minutes."

Major Kimball tried to see him in the early morning gloom. He had not been asleep. It would have been wasteful to spend these last few hours sleeping. Instead, he had been remembering —

He said, "All right, Sergeant. Coming up."

He swung his feet to the bare boards and sat for a moment wishing he hadn't given up smoking. He could almost imagine the textured taste of the cigarette on his tongue.

Oddly enough, he wasn't tired. He wasn't nervous or excited, either. And that was odder still.

He stood up and opened the window to look out at the velvet night of the Cape. He could hear the sea. Overhead the stars were brilliant. Mars gleamed russet-colored against the sable night. He smiled, remembering again. So long a road from then to now.

He stopped smiling and turned away from the window. The road had also been hard. Combat, test flying, competition all the way. The goddam headshrinkers were the toughest, always wanting him to bug out on the deal because of their brainwave graphs and word association tests and Rorschach blots.

"You're a lonely man, Kimball."

"Too much imagination could be bad for this job."

Kimball shook his head and grinned slightly. You couldn't blame them in a way. What was it like when a man sat there with pentothal in his veins and encephalograph electrodes on his head and told you about the still waters of Korus, or the pennons flying from the twin towers of Greater Helium, or the way the tiny slanting sun gleamed at dawn through the rigging of a flyer?

Cry in the wilderness, headshrinkers! He thought of them with satisfaction. There were five picked for Project Mercury. But only one for Project Ares. Kimmy Kimball is going to Mars. No one else.

He snapped on a light and looked at his watch. Oh three ten hours. Zero minus one fifty.

He opened his steel locker and began to dress.

THE water swirled warm and velvety around his ankles. There, behind that madrone tree, Kimmy thought with delicious horror. Was that a Plant Man? He could see the thick white trunk and the bloodsucking arms—

The radium pistol's weight made his wrist ache, but he clung to it tightly. He could not cope with a Plant Man with a sword alone. The certainty of coming battle made him smile a little, the way John Carter would smile if he were here in the Valley of Korus ready to attack the white Therns and their Plant Men.

For a moment Kimmy felt a thrill of apprehension. The deepening stillness of the riparian dusk was closing in all around him. Even the music of the phonograph was very, very faint. Above him, the great vault of the sky was changing from pink to gray to dusty blue. A bright star was breaking through the curtain of fading light. He knew it was Venus, the Evening Star. But let it be Earth, he thought. And instead of white, let it be the color of an emerald.

He paused in midstream, letting the warm water riffle around his feet. Looking up at the green beacon of the planet of his birth, he thought: I've left all that behind me. I'm sorry about leaving mother and dad, but it was never really what I wanted. Mars is where I belong. With my friends, John Carter the Warlord, Tars Tarkas the Great Green Jeddak, and all the beautiful brave people.

The hated Father of Therns sang with Vallee's voice: *Come with me where southern skies will watch you with a million eyes* —

Kimmy's eyes narrowed.

He waded stealthily across the shallows of the Sacred Iss. He could see Matai Shang, the Thern Father, resplendent in his jeweled harness and his yellow wig and Holy Diadem, spreading his arms out to the sunset. He stood safely in his balcony above the river while the Plant Men responded to his call. Were they gathering to attack Tars Tarkas or another band of helpless pilgrims?

Matai Shang looked a little like Mr. Grossman standing on the verandah of his cottage. But that was all right. The dreadful Valley of Korus was wonderfully alive with adventure. It didn't matter that Matai Shang looked like Mr. Grossman and sang like Rudy Vallee.

Kimmy stepped cautiously ashore and moved into the cover of a clump of willows. The sky was

darkening fast and soon someone was sure to start calling him. There wasn't much time left.

MAJOR Kimball stood now in the bright glare of the briefing bunker's lights, a strange figure in G-suit and helmet. The representatives of the press had been handed their mimeographed releases by the PIO. Now they sat listening to the briefing being delivered by General Hazel, the Project Officer. Occasionally Kimball would surprise one of the newsmen looking at him with mixed admiration and doubt. Kimball knew what they were thinking. Why him? Out of all the applicants—and there are always applicants for a nearly-sure-death job — why this particular one?

Well, Kimball thought, why not? Maybe Project Ares was meant to be mine from the beginning.

General Hazel talked, reading from the mimeographed sheet. He was skirting some highly sensitive areas. He spoke carefully and without expression, wishing he didn't have to talk at all to these civilians.

Kimball listened, only half aware of what was being said. He watched the faces of the men sitting on the rows of folding chairs, saw their eyes like wounds, red with sleeplessness and the celebration last night at the Officers' Club — the celebration in his honor that, of course, he hadn't attended.

On the dais nearby, listening to General Hazel but watching Kimball, sat Colonel Steinhart, the Project Psychiatrist. Kimball returned his steady gaze without flinching, inwardly amused. If I look away, he thought, Steinhart will write it down. The accumulation of trivia was the good doctor's life work. Kimball felt sorry for him. It must be a bitter thing, he thought, to wish to know the human mind and find only shadows. Stephen Crane once wrote: There is nothing but opinion — and opinion be damned.

It was like that.

The big clock on the wall of the bunker said oh three fifty-five. Zero minus one hour and five minutes. The countdown on the rocket had begun twenty-five minutes ago. No hold so far; none expected.

Kimball looked around at the red eyes and open mouths. What have I to do with you now? There are worse things than being alone.

Outside the bunker, the night lay warm and still over the base. Floodlights spilled brilliance over the dunes and the scrubby palms, high fences casting laced shadows across the burning white expanses of ferroconcrete.

As the men filed out of the briefing room, Dr. Steinhart climbed into the command car with Kimball. Was it chance or design? The pilot wondered. The others were leaving them alone.



"We haven't gotten on too well, have we, Major?" Steinhart said in a quiet voice.

Kimball thought: He's pale skinned and very blond. What is it that he reminds me of? Shouldn't there be a diadem on his forehead?

He smiled vaguely into the whispering night. That's what it was. Odd that he should have forgotten. How many of my generation, he wondered, were raised on those Edgar Rice Burroughs books anyway? And how many remembered now that all the Thern priests wore yellow wigs and a circlet of gold with some fantastic jewel on their foreheads?

"We've done as well as could be expected," he said.

STEINHART reached for a cigarette and then stopped, remembering that Kimball had given them up because of the Project. Kimball caught the doctor's movement and half smiled. He's good, the pilot thought. He's very good. Friendly, compassionate, concerned. They probably taught him that in medical school.

"I didn't try to kill the assignment for you, Kim," the doctor said.

"Well, it doesn't matter now."

"No, I suppose not. I just don't want you to think of me as an enemy."

Kimball shrugged. The bindings of his pressure suit creaked slightly.

"Your record is good all the way. You know that," Steinhart said. "It's just some of the things—"

Kimball said, "I talked too much."

"You had to."

"You wouldn't think my secret life was so dangerous, would you?" Kimball said, smiling.

The doctor made an impatient gesture. "You won't try to understand."

Kimball shrugged. He didn't really care now.

"I know you were married and divorced, Kim," the doctor said. "Would you tell me what happened now?"

"For the record? More therapy?"

"No. This is for me. I'd like to know."

The pilot shrugged again. "It just didn't work. She was a fine girl, but she finally told me it was no go." And he remembered what she said. "You don't live here, Kim." That was a strange thing for a wife to say. But there was no point in telling Steinhart. He'd make something significant out of it.

"She didn't like the life," Kimball said with finality.

The doctor frowned. "She knew you were a career officer. What did she expect?"

Kimball didn't answer. He had forgotten Steinhart already. He was looking out across the ramp at the Project Ares launching pad.

Dr. Steinhart sighed and said, "I wish you luck, Kim. I mean that."

"Thanks." Kimball answered him across a widening gulf.

"You'll have a long, lonely wait for the next shoot," Steinhart said.

"I've got my instructions," Kimball said.

"Two years alone—"

They are all so sure I'll be alone, Kimball thought. He glanced up at the red planet low on the horizon and smiled. Amber smoke was rising from the control bunker. It was now zero minus fifty-six minutes.

"KIM," Steinhart said slowly. "There is something you should know about. Something you should be prepared for."

"Yes?"

Disinterest in his voice, Steinhart noted clinically. Natural under the circumstances? Or incipient neurosis already? If they had only listened to me, Steinhart thought.

Steinhart continued, "Our tests showed you to be a schizoid — well compensated, of course. You know there is no such thing as an absolutely *normal* human being. We all have tendencies toward one or more types of aberration. In your case, the symptoms are an overactive imagination and sometimes an inability to distinguish reality from — well, fancy."

"You headshrinkers see a looney under every bush," Kimball said vaguely.

Steinhart felt futile and out of his depth. "No one is saying anything about loonies, Kim. It's just that we have so little data on the psychology of spaceflight."

"That's what I'm supposed to provide, isn't it, Colonel?" Kimball was looking up at the sky.

"What I'm trying to say, Kim, is that a man of your type sometimes regresses—"

"Doctor," Kimball said patiently, "I passed all the tests."

Steinhart nodded reluctantly. "Yes. Yes, you did."

"Then let's drop it, please."

Steinhart subsided into uncomfortable silence. He listened to the rumble of the tires on the concrete, the murmur of the motor. I could be wrong, he thought. After all, what is reality?

Reality was the rocket, towering in the floodlights, garishly painted in black and orange, against the first flickerings of the false dawn.

KIMMMY saw the girls before they saw him. In their new, low-waisted middies and skirts, they looked strange and out of place standing by the pebbled shore of the Sacred Iss.

They were his sisters, Rose and Margaret, older than he at fifteen and seventeen. But they were walking into the Valley of Korus and into danger. Behind him he could hear the rustle of the Plant Men as the evening breeze came up and touched the willows.

"Kimm-eee—"

They were calling him. In the deepening dusk their voices carried far down the river.

"Mr. Grossman, have you seen Kimmy?"

The hated Father of Therns shrugged and pulled on his galluses.

"Kimmm-eeee—!"

Kimmy knew he should answer then, but he did not. Behind him he could hear the Plant Men approaching. He shivered with delicious horror. He stood very still and listened to his sisters talking, letting their voices carry into the clump of willows where he hid from the dangers of the Valley of the Lost Sea of Korus.

"Where is that little brat, anyway?"

"He *always* wanders off *just* at *dinnertime* and then *we* have to find him. It isn't *fair!*"

"Playing with that silly old *faucet!*" Cruel mimicry now. "My raydee-yum pistol—"

"Oh, where *is* he *anyway?* Kimmeee, you *answer!*"

Something died in him. He tried hard to keep it alive. It wasn't a faucet. It was a radium pistol! Tars Tarkas the Great Green Jeddak had given it to him himself!

He looked at his sisters with dismay. They weren't really his sisters. They were Therns with their yellow hair and pale skins. He and John Carter and Tars Tarkas had fought them many times, piling their bodies for barricades and weaving a pattern of skillful sword-points in the shifting light of the two moons.

"Kimmmm—eee! We know you can hear us! Mom is going to be mad at you! Answer us, you hear?"

If only Tars Tarkas would come now! If only the Great Green Jeddak would come splashing across the stream on his huge thoat, his two swords clashing—

"I see him! He's hiding in that clump of willows!"

"Kimmy, you come here this instant!"

The Valley of Korus was fading, blurring. The Golden Cliffs were turning into sandy, worn riverbanks and the battlements and balconies were the verandahs of summer cottages.

The faucet felt heavy in Kimmy's grimy hand. He shivered—not with wonder now, with cold.

He walked out of the willows, stumbling on the rocks.

MAJOR Kimball lay like an embryo in the nose cone. Time was not. Time became the ticking of the timers and immense speed.

He was thinking of that summer when the river lay still and deep under the hanging willows. Never before and never afterward had it held that same evocative magic. He remembered his sisters, thin and angular creatures as he recalled them through the eyes of an eleven-year-old. And his mother, tall and shadowy, standing on the screen-porch of the rented cottage and saying exasperatedly: "You worry us so running off like that, Kimmy!"

He thought with vague amusement: "I've really run off now."

It was good to dream of the low, beamed ceiling of the cottage and the thick close darkness of the summer nights. Oh, there had been such longing. For something.

What was it? A place, a time?

Perhaps that. The place was a world of low red hills and a sky that burned deep blue through long, long days. And canals — yes, canals that were clear and still. And the time, what was the time? The time was youth. The time was tomorrow and yesterday. The time never was.

But the place?

Kimball thought with sudden wonder: I'm going to Mars!

There were routine duties in the tiny cone. That way time slipped by as all around the missile spread the stunning, star-dusted night.

HE had been confined for nearly a hundred days when the descending orbital spiral began. The great ribbon parachute burst from the nose cone.

Heat. Terrible heat and tumbling blows. Kimball never knew when the cone landed. He lay for a long while, shocked and injured, but alive.

In time he opened the shielded ports.

He shrank from what he saw.

Desolation! An eternity of wasteland.

Red sands blowing across a sere and sterile plain. Emptiness.

"I'm alone," he murmured.

The dry, icy wind plucked at the scored surfaces of the cone.

He could feel panic clutching at him. The protective suit he wore seemed to press in on him, suffocatingly.

The wasteland beyond the port had been a wasteland for ten times ten million years. Kimball felt the weight of these years pressing on his sanity.

He began to whimper softly.

"Help me," he said pleadingly. "Help me, Kimmy—"

Something began to move on the great empty desert.

Kimball cried out with joy and clawed desperately at the hatch.

Suddenly the inner pressure jerked the valve from his hand and he plunged to the rusty sand, his ears cracking and his lungs gasping for air in the thin Martian atmosphere. His vision was cloudy and his head felt light.

Something *was* moving on the plain.

A shadowy cavalcade.

Strange, monstrous men on fantastic war-mounts, long spears and fluttering pennons. Huge golden chariots with scythes flashing on

the circling hubs, and armored giants —

The figments of a long-remembered dream.

He dropped to the sand and dug his hands into the dry, rusty soil. He fought to suck air into his laboring lungs.

"Kimm-eeee!"

A huge green warrior on a gray monster of a thoat was beckoning to him, pointing toward the low hills on the oddly near horizon.

"Kimm-eeee!"

The voice was thin and distant on the icy wind. Kimball knew that voice.

He knew it from long ago in the Valley of Korus, by the shores of the mysterious sacred river.

He came to his knees and then his feet, stumbling happily across the empty, lifeless plain.

He knew the voice, he knew the man, and he knew the hills that he must reach before he died.

They were the hills of home.

— ALFRED COPPEL

R.S.V.P.

You are most cordially invited to the 18th World Science Fiction Convention, to be held at the Penn-Sheraton Hotel, Pittsburgh, Pa., Labor Day weekend, September 3, 4 and 5, 1960.

Guest of honor will be James Blish, winner of the 1959 Hugo Award for his novel A Case of Conscience.

Isaac Asimov, Philip Jose Farmer, Hal Clement and many other science fiction luminaries will be present.

Among the stellar events will be a masquerade, a banquet where the 1960 Hugo Awards will be presented, an auction of books, artwork and manuscripts.

Registration fee is $2.00 ($1.00 for overseas).

Mail your registration fee and requests for further information to: PITTCON, c/o Mrs. Dirce S. Archer, 1453 Barnsdale Street, Pittsburgh 17, Pa. Make your checks or money orders payable to P. Schuyler Miller, Treasurer, or to 18th World Science Fiction Convention Committee.

BEACH SCENE

By MARSHALL KING

PURNIE ran laughing and shouting through the forest until he could run no more. He fell headlong into a patch of blue moss and whooped with delight in having this day free for exploring. He was free to see the ocean at last.

When he had caught his breath, he looked back through the forest. No sign of the village; he had left it far behind. Safe from the scrutiny of brothers and parents, there was nothing now to stop him from going to the ocean. This was the moment to stop time.

"On your mark!" he shouted to the rippling stream and its orange whirlpools. He glanced furtively from side to side, pretending that some object might try to get a head start. "Get set!" he challenged the

Illustrated by WOOD

It was a fine day at the beach

for Purnie's game — but his new

friends played very rough!

thin-winged bees that hovered over the abundant foliage. "Stop!" He shrieked this command upward toward the dense, low-hanging purple clouds that perenially raced across the treetops, making one wonder how tall the trees really were.

His eyes took quick inventory. It was exactly as he knew it would be: the milky-orange stream had become motionless and its minute whirlpools had stopped whirling; a nearby bee hung suspended over a paka plant, its transparent wings frozen in position for a downward stroke; and the heavy purple fluid overhead held fast in its manufacture of whorls and nimbi.

With everything around him in a state of perfect tableau, Purnie hurried toward the ocean.

If only the days weren't so short! he thought. There was so much to see and so little time. It seemed that everyone except him had seen the wonders of the beach country. The stories he had heard from his brothers and their friends had taunted him for as long as he could remember. So many times had he heard these thrilling tales that now, as he ran along, he could clearly picture the wonderland as though he were already there. There would be a rockslide of petrified logs to play on, the ocean itself with waves higher than a house, the comical three-legged tripons who never stopped munching on seaweed, and many kinds of other wonderful creatures found only at the ocean.

He bounced through the forest as though the world was reserved this day just for him. And who could say it wasn't? he thought. Wasn't this his fifth birthday? He ran along feeling sorry for four-year-olds, and even for those who were only four and a half, for they were babies and wouldn't dare try slipping away to the ocean alone. But five!

"I'll set you free, Mr. Bee — just wait and see!" As he passed one of the many motionless pollen-gathering insects he met on the way, he took care not to brush against it or disturb its interrupted task. When Purnie had stopped time, the bees — like all the other creatures he met—had been arrested in their native activities, and he knew that as soon as he resumed time, everything would pick up where it had left off.

WHEN he smelled an acid sweetness that told him the ocean was not far off, his pulse quickened in anticipation. Rather than spoil what was clearly going to be a perfect day, he chose to ignore the fact that he had been forbidden to use time-stopping as a convenience for journeying far from home. He chose to ignore the oft-repeated statement that an hour of time-stopping consumed more energy than a week of foot-racing. He chose to ignore the negative maxim that "small children who stop time without an adult being present, may not live to regret it."

He chose, instead, to picture the beaming praise of family and friends when they learned of his brave journey.

The journey was long, the clock stood still. He stopped long enough to gather some fruit that grew along the path. It would serve as his lunch during this day of promise. With it under his arm he bounded along a dozen more steps, then stopped abruptly in his tracks.

He found himself atop a rocky knoll, overlooking the mighty sea!

He was so overpowered by the vista before him that his "Hurrah!" came out as a weak squeak. The ocean lay at the ready, its stilled waves awaiting his command to resume their tidal sweep. The breakers along the shoreline hung in varying stages of disarray, some having already exploded into towering white spray while others were poised in smooth orange curls waiting to start that action.

And there were new friends everywhere! Overhead, a flock of spora were frozen in a steep glide, preparatory to a beach landing. Purnie had heard of these playful creatures many times. Today, with his brothers in school, he would have the pets all to himself. Further down the beach was a pair of two-legged animals poised in mid-step, facing the spot where Purnie now stood. Some distance behind them were eight more, each of whom were motionless in a curious pose of interrupted animation. And down in the water, where the ocean ran itself into thin nothingness upon the sand, he saw standing here and there the comical tripons, those three-legged marine buffoons who made handsome careers of munching seaweed.

"Hi there!" Purnie called. When he got no reaction, he remembered that he himself was "dead" to the living world: he was still in a zone of time-stopping, on the inside looking out. For him, the world would continue to be a tableau of mannikins until he resumed time.

"HI there!" he called again; but now his mental attitude was that he expected time to resume. It did! Immediately he was surrounded by activity. He heard the roar of the crashing orange breakers, he tasted the dew of acid that floated from the spray, and he saw his new friends continue the actions which he had stopped while back in the forest.

He knew, too, that at this moment, in the forest, the little brook picked up its flow where it had left off, the purple clouds resumed their leeward journey up the valley, and the bees continued their pollen-gathering without having missed a single stroke of their

delicate wings. The brook, the clouds, and the insects had not been interrupted in the least; their respective tasks had been performed with continuing sureness. It was time itself that Purnie had stopped, not the world around him.

He scampered around the rock-pile and down the sandy cliff to meet the tripons who, to him, had just come to life.

"I can stand on my head!" He set down his lunch and balanced himself bottoms-up while his legs pawed the air in an effort to hold him in position. He knew it was probably the worst head-stand he had ever done, for he felt weak and dizzy. Already time-stopping had left its mark on his strength. But his spirits ran on unchecked.

The tripon thought Purnie's feat was superb. It stopped munching long enough to give him a salutory wag of its rump before returning to its repast.

Purnie ran from pillar to post, trying to see and do everything at once. He looked around to greet the flock of spora, but they had glided to a spot further along the shore. Then, bouncing up to the first of the two-legged animals, he started to burst forth with his habitual "Hi there!" when he heard them making sounds of their own.

"... will be no limit to my operations now, Benson. This planet makes seventeen. Seventeen planets I can claim as my own!"

"My, my. Seventeen planets. And tell me, Forbes, just what the hell are you going to do with them — mount them on the wall of your den back in San Diego?"

"Hi there, wanna play?" Purnie's invitation got nothing more than a startled glance from the animals who quickly returned to their chatter. He scampered up the bench, picked up his lunch, and ran back to them, tagging along at their heels. "I've got my lunch, want some?"

"Benson, you'd better tell your men back there to stop gawking at the scenery and get to work. Time is money. I didn't pay for this expedition just to give your flunkies a vacation."

THE animals stopped so suddenly that Purnie nearly tangled himself in their heels.

"All right, Forbes, just hold it a minute. Listen to me. Sure, it's your money that put us here; it's your expedition all the way. But you hired me to get you here with the best crew on earth, and that's just what I've done. My job isn't over yet. I'm responsible for the safety of the men while we're here, and for the safe trip home."

"Precisely. And since you're responsible, get 'em working. Tell 'em to bring along the flag. Look at the damn fools back there, playing in the ocean with a three-legged ostrich!"



BEACH SCENE

"Good God, man, aren't you human? We've only been on this planet twenty minutes! Naturally they want to look around. They half expected to find wild animals or worse, and here we are surrounded by quaint little creatures that run up to us like we're long-lost brothers. Let the men look around a minute or two before we stake out your claim."

"Bah! Bunch of damn children."

As Purnie followed along, a leg shot out at him and missed. "Benson, will you get this bug-eyed kangaroo away from me!" Purnie shrieked with joy at this new frolic and promptly stood on his head. In this position he got an upside down view of them walking away.

He gave up trying to stay with them. Why did they move so fast, anyway? What was the hurry? As he sat down and began eating his lunch, three more of the creatures came along making excited noises, apparently trying to catch up to the first two. As they passed him, he held out his lunch. "Want some?" No response.

Playing held more promise than eating. He left his lunch half eaten and went down to where they had stopped further along the beach.

"Captain Benson, sir! Miles has detected strong radiation in the vicinity. He's trying to locate it now."

"There you are, Forbes. Your new piece of real estate is going to make you so rich that you can *buy* your next planet. That'll make eighteen, I believe."

"Radiation, bah! We've found low-grade ore on every planet I've discovered so far, and this one'll be no different. Now how about that flag? Let's get it up, Benson. And the cornerstone, and the plaque."

"All right, lads. The sooner we get Mr. Forbes's pennant raised and his claim staked out, the sooner we can take time to look around. Lively now!"

WHEN the three animals went back to join the rest of their group, the first two resumed walking. Purnie followed along.

"Well, Benson, you won't have to look far for materials to use for the base of the flag pole. Look at that rockpile up there.

"Can't use them. They're petrified logs. The ones on top are too high to carry down, and if we move those on the bottom, the whole works will slide down on top of us."

"Well—that's your problem. Just remember, I want this flag pole to be solid. It's got to stand at least—"

"Don't worry, Forbes, we'll get your monument erected. What's this with the flag? There must be more to staking a claim than just putting up a flag."

"There is, there is. Much more. I've taken care of all requirements set down by law to make my claim. But the flag? Well, you might say it represents an empire, Benson. The Forbes Empire. On each of my flags is the word FORBES, a symbol of development and progress. Call it sentiment if you will."

"Don't worry, I won't. I've seen real-estate flags before."

"Damn it all, will you stop referring to this as a real-estate deal? What I'm doing is big, man. Big! This is pioneering."

"Of course. And if I'm not mistaken, you've set up a neat little escrow system so that you not only own the planets, but you will virtually own the people who are foolish enough to buy land on them."

"I could have your hide for talking to me like this. Damn you, man! It's people like me who pay your way. It's people like me who give your space ships some place to go. It's people like me who pour good money into a chancey job like this, so that people like you can get away from thirteen-story tenement houses. Did you ever think of that?"

"I imagine you'll triple your money in six months."

When they stopped, Purnie stopped. At first he had been interested in the strange sounds they were making, but as he grew used to them, and as they in turn ignored his presence, he hopped alongside chattering to himself, content to be in their company.

He heard more of these sounds coming from behind, and he turned to see the remainder of the group running toward them.

"Captain Benson! Here's the flag, sir. And here's Miles with the scintillometer. He says the radiation's getting stronger over this way!"

"How about that, Miles?"

"This thing's going wild, Captain. It's almost off scale."

PURNIE saw one of the animals hovering around him with a little box. Thankful for the attention, he stood on his head. "Can you do this?" He was overjoyed at the reaction. They all started making wonderful noises, and he felt most satisfied.

"Stand back, Captain! Here's the source right here! This little chuckwalla's hotter than a plutonium pile!"

"Let me see that, Miles. Well, I'll be damned! Now what do you suppose—"

By now they had formed a widening circle around him, and he was hard put to think of an encore. He gambled on trying a brand new trick: he stood on one leg.

"Benson, I must have that animal! Put him in a box."

"Now wait a minute, Forbes. Universal Law forbids—"

"This is my planet and I am the law. Put him in a box!"

"With my crew as witness, I officially protest—"

"Good God, what a specimen to take back. Radio-active animals!

Why, they can reproduce themselves, of course! There must be thousands of these creatures around here someplace. And to think of those damn fools on Earth with their plutonium piles! Hah! Now I'll have investors *flocking* to me. How about it, Benson — does pioneering pay off or doesn't it?"

"Not so fast. Since this little fellow is radioactive, there may be great danger to the crew—"

"Now look here! You had planned to put *mineral* specimens in a lead box, so what's the difference? Put him in a box."

"He'll die."

"I have you under contract, Benson! You are responsible to me, and what's more, you are on my property. Put him in a box."

Purnie was tired. First the time-stopping, then this. While this day had brought more fun and excitement than he could have hoped for, the strain was beginning to tell. He lay in the center of the circle happily exhausted, hoping that his friends would show him some of their own tricks.

He didn't have to wait long. The animals forming the circle stepped back and made way for two others who came through carrying a box. Purnie sat up to watch the show.

"Hell, Captain, why don't I just pick him up? Looks like he has no intention of running away."

"Better not, Cabot. Even though you're shielded, no telling what powers the little fella has. Play it safe and use the rope."

"I swear he knows what we're saying. Look at those eyes."

"All right, careful now with that line."

"Come on, baby. Here you go. That's a boy!"

PURNIE took in these sounds with perplexed concern. He sensed the imploring quality of the creature with the rope, but he didn't know what he was supposed to do. He cocked his head to one side as he wiggled in anticipation.

He saw the noose spinning down toward his head, and, before he knew it, he had scooted out of the circle and up the sandy beach. He was surprised at himself for running away. Why had he done it? He wondered. Never before had he felt this fleeting twinge that made him want to protect himself.

He watched the animals huddle around the box on the beach, their attention apparently diverted to something else. He wished now that he had not run away; he felt he had lost his chance to join in their fun.

"Wait!" He ran over to his half-eaten lunch, picked it up, and ran back into the little crowd. "I've got my lunch, want some?"

The party came to life once more. His friends ran this way and that, and at last Purnie knew that the idea was to get him into the box. He picked up the spirit of the tease,

and deliberately ran within a few feet of the lead box, then, just as the nearest pursuer was about to push him in, he sidestepped onto safer ground. Then he heard a deafening roar and felt a warm, wet sting in one of his legs.

"Forbes, you fool! Put away that gun!"

"There you are, boys. It's all in knowing how. Just winged him, that's all. Now pick him up."

The pang in his leg was nothing: Purnie's misery lay in his confusion. What had he done wrong? When he saw the noose spinning toward him again, he involuntarily stopped time. He knew better than to use this power carelessly, but his action now was reflex. In that split second following the sharp sting in his leg, his mind had grasped in all directions to find an acceptable course of action. Finding none, it had ordered the stoppage of time.

The scene around him became a tableau once more. The noose hung motionless over his head while the rest of the rope snaked its way in transverse waves back to one of the two-legged animals. Purnie dragged himself through the congregation, whimpering from his inability to understand.

As he worked his way past one creature after another, he tried at first to not look them in the eye, for he felt sure he had done something wrong. Then he thought that by sneaking a glance at them as he passed, he might see a sign pointing to their purpose. He limped by one who had in his hand a small shiny object that had been emiting smoke from one end; the smoke now billowed in lifeless curls about the animal's head. He hobbled by another who held a small box that had previously made a hissing sound whenever Purnie was near. These things told him nothing. Before starting his climb up the knoll, he passed a tripon which, true to its reputation, was comical even in fright. Startled by the loud explosion, it had jumped four feet into the air before Purnie had stopped time. Now it hung there, its beak stuffed with seaweed and its three legs drawn up into a squatting position.

Leaving the assorted statues behind, he limped his way up the knoll, torn between leaving and staying. What an odd place, this ocean country! He wondered why he had not heard more detail about the beach animals.

Reaching the top of the bluff, he looked down upon his silent friends with a feeling of deep sorrow. How he wished he were down there playing with them. But he knew at last that theirs was a game he didn't fit into. Now there was nothing left but to resume time and start the long walk home. Even though the short day was nearly over, he knew he didn't dare use time-stopping to get himself home in nothing flat.

His fatigued body and clouded mind were strong signals that he had already abused this faculty.

WHEN Purnie started time again, the animal with the noose stood in open-mouthed disbelief as the rope fell harmlessly to the sand — on the spot where Purnie had been standing.

"My God, he's — he's gone."

Then another of the animals, the one with the smoking thing in his hand, ran a few steps toward the noose, stopped and gaped at the rope. "All right, you people, what's going on here? Get him in that box. What did you do with him?"

The resumption of time meant nothing at all to those on the beach, for to them time had never stopped. The only thing they could be sure of was that at one moment there had been a fuzzy creature hopping around in front of them, and the next moment he was gone.

"Is he invisible, Captain? Where is he?"

"Up there, Captain! On those rocks. Isn't that him?"

"Well, I'll be damned!"

"Benson, I'm holding you personally responsible for this! Now that you've botched it up, I'll bring him down my own way."

"Just a minute, Forbes, let me think. There's something about that fuzzy little devil that we should . . . Forbes! I warned you about that gun!"

Purnie moved across the top of the rockpile for a last look at his friends. His weight on the end of the first log started the slide. Slowly at first, the giant pencils began cascading down the short distance to the sand. Purnie fell back onto solid ground, horrified at the spectacle before him. The agonizing screams of the animals below filled him with hysteria.

The boulders caught most of them as they stood ankle-deep in the surf. Others were pinned down on the sand.

"I didn't mean it!" Purnie screamed. "I'm sorry! Can't you hear?" He hopped back and forth near the edge of the rise, torn with panic and shame. "Get up! Please get up!" He was horrified by the moans reaching his ears from the beach. "You're getting all wet! Did you hear me? Please get up." He was choked with rage and sorrow. How could he have done this? He wanted his friends to get up and shake themselves off, tell him it was all right. But it was beyond his power to bring it about.

The lapping tide threatened to cover those in the orange surf.

PURNIE worked his way down the hill. imploring them to save themselves. The sounds they made carried a new tone, a desperate foreboding of death.

"Rhodes! Cabot! Can you hear me?"

"I — I can't move, Captain. My leg, it's . . . My God, we're going to drown!"

"Look around you, Cabot. Can you see anyone moving?"

"The men on the beach are nearly buried, Captain. And the rest of us here in the water—"

"Forbes. Can you see Forbes? Maybe he's—" His sounds were cut off by a wavelet gently rolling over his head.

Purnie could wait no longer. The tides were all but covering one of the animals, and soon the others would be in the same plight. Disregarding the consequences, he ordered time to stop.

Wading down into the surf, he worked a log off one victim, then he tugged the animal up to the sand. Through blinding tears, Purnie worked slowly and carefully. He knew there was no hurry — at least, not as far as his friends' safety was concerned. No matter what their condition of life or death was at this moment, it would stay the same way until he started time again. He made his way deeper into the orange liquid, where a raised hand signalled the location of a submerged body. The hand was clutching a large white banner that was tangled among the logs. Purnie worked the animal free and pulled it ashore.

It was the one who had been carrying the shiny object that spit smoke.

Scarcely noticing his own injured leg, he ferried one victim after another until there were no more in the surf. Up on the beach, he started unraveling the logs that pinned down the animals caught there. He removed a log from the lap of one, who then remained in a sitting position, his face contorted into a frozen mask of agony and shock. Another, with the weight removed, rolled over like an iron statue into a new position. Purnie whimpered in black misery as he surveyed the chaotic scene before him.

At last he could do no more; he felt consciousness slipping away from him.

He instinctively knew that if he lost his senses during a period of time-stopping, events would pick up where they had left off . . . without him. For Purnie, this would be death. If he had to lose consciousness, he knew he must first resume time.

Step by step he plodded up the little hill, pausing every now and then to consider if this were the moment to start time before it was too late. With his energy fast draining away, he reached the top of the knoll, and he turned to look down once more on the group below.

Then he knew how much his mind and body had suffered: when he ordered time to resume, nothing happened.

His heart sank. He wasn't afraid

of death, and he knew that if he died the oceans would roll again and his friends would move about. But he wanted to see them safe.

He tried to clear his mind for supreme effort. There was no *urging* time to start. He knew he couldn't persuade it by bits and pieces, first slowly then full ahead. Time either progressed or it didn't. He had to take one viewpoint or the other.

Then, without knowing exactly when it happened, his mind took command . . .

HIS friends came to life. The first one he saw stir lay on his stomach and pounded his fists on the beach. A flood of relief settled over Purnie as sounds came from the animal.

"What's the matter with me? Somebody tell me! Am I nuts? Miles! Schick! What's happening?"

"I'm coming, Rhodes! Heaven help us, man — I saw it, too. We're either crazy or those damn logs are alive!"

"It's not the logs. How about us? How'd we get out of the water? Miles, we're both cracking."

"I'm telling you, man, it's the logs, or rocks or whatever they are. I was looking right at them. First they're on top of me, then they're piled up over there!"

"Damnit, the logs didn't pick us up out of the ocean, did they? Captain Benson!"

"Are you men all right?"

"Yes sir, but—"

"Who saw exactly what happened?"

"I'm afraid we're not seeing right, Captain. Those logs—"

"I know, I know. Now get hold of yourselves. We've got to round up the others and get out of here while time is on our side."

"But what happened, Captain?"

"Hell, Rhodes, don't you think I'd like to know? Those logs are so old they're petrified. The whole bunch of us couldn't lift one. It would take super-human energy to move one of those things."

"I haven't seen anything super-human. Those ostriches down there are so busy eating seaweed—"

"All right, let's bear a hand here with the others. Some of them can't walk. Where's Forbes?"

"He's sitting down there in the water, Captain, crying like a baby. Or laughing. I can't tell which."

"We'll have to get him. Miles, Schick, come along. Forbes! You all right?"

"Ho-ho-ho! Seventeen! Seventeen! Seventeen planets, Benson, and they'll do anything I say! This one's got a mind of its own. Did you see that little trick with the rocks? Ho-ho!"

"See if you can find his gun, Schick; he'll either kill himself or one of us. Tie his hands and take him back to the ship. We'll be along shortly."

"Hah-hah-hah! Seventeen! Benson, I'm holding you personally responsible for this. Hee-hee!"

PURNIE opened his eyes as consciousness returned. Had his friends gone?

He pulled himself along on his stomach to a position between two rocks, where he could see without being seen. By the light of the twin moons he saw that they were leaving, marching away in groups of two and three, the weak helping the weaker. As they disappeared around the curving shoreline, the voices of the last two, bringing up the rear far behind the others, fell faintly on his ears over the sound of the surf.

"Is it possible that we're all crazy, Captain?"

"It's possible, but we're not."

"I wish I could be sure."

"See Forbes up ahead there? What do you think of him?"

"I still can't believe it."

"He'll never be the same."

"Tell me something. What was the most unusual thing you noticed back there?"

"You must be kidding, sir. Why, the way those logs were off of us suddenly—"

"Yes, of course. But I mean beside that."

"Well, I guess I was kind of busy. You know, scared and mixed up."

"But didn't you notice our little pop-eyed friend?"

"Oh, him. I'm afraid not, Captain. I — I guess I was thinking mostly of myself."

"Hmmm. If I could only be sure I saw him. If only someone else saw him too."

"I'm afraid I don't follow you, sir."

"Well, damn it all, you know that Forbes took a pot shot at him. Got him in the leg. That being the case, why would the fuzzy little devil come back to his tormentors—back to us — when we were trapped under those logs?"

"Well, I guess as long as we were trapped, he figured we couldn't do him any more harm . . . I'm sorry, that was a stupid answer. I guess I'm still a little shaky."

"Forget it. Look, you go ahead to the ship and make ready for take-off. I'll join you in a few minutes. I think I'll go back and look around. You know. Make sure we haven't left anyone."

"No need to do that. They're all ahead of us. I've checked."

"That's my responsibility, Cabot, not yours. Now go on."

AS Purnie lay gathering strength for the long trek home, he saw through glazed eyes one of the animals coming back along the beach. When it was nearly directly below him, he could hear it making sounds that by now had become familiar.

"Where are you?"

Purnie paid little attention to

the antics of his friend; he was beyond understanding. He wondered what they would say at home when he returned.

"We've made a terrible mistake. We—" The sounds faded in and out on Purnie's ears as the creature turned slowly and called in different directions. He watched the animal walk over to the pile of scattered logs and peer around and under them.

"If you're hurt I'd like to help!" The twin moons were high in the sky now, and where their light broke through the swirling clouds a double shadow was cast around the animal. With foggy awareness, Purnie watched the creature shake its head slowly, then walk away in the direction of the others.

Purnie's eyes stared, without seeing, at the panorama before him. The beach was deserted now, and his gaze was transfixed on a shimmering white square floating on the ocean. Across it, the last thing Purnie ever saw, was emblazoned the word FORBES.

— MARSHALL KING

GIVE
AMERICAN
CANCER
SOCIETY



BY WILLY LEY

THE AIR ON THE MOON

IT WAS a very clear, very cold night in Texas as we walked across the campus. A nearly full Moon was straight overhead and we stopped for a moment to look at it. "Gosh," said one of the girls, "it's so clear you can actually *see* there is no air on the Moon!"

And that is, of course, what every textbook since Giovanni Battista Riccioli's *Almagestum novum* of 1651 has said: there is no air on the Moon. And when modern astronomers speak about

a "lunar atmosphere," they are not contradicting this idea, even if it may seem so at first glance. It all depends on your definition. If by "atmosphere" you mean something that you can breathe and which exerts enough pressure on your body to keep the body fluids liquid, then the Moon has no atmosphere. But if your definition of atmosphere is more scientific — a collection of free molecules of gases on the surface of a body of planetary or near-planetary mass — then the Moon does have an atmosphere.

It is, in fact, a very special atmosphere, consisting exclusively (we think) of those gases which are collectively referred to as "rare gases" or, sometimes, as "noble gases." The first of these terms needs no explanation; they *are* rare. The second term, used in Europe, refers to the fact that they do not combine with anything to form any chemical compounds; they do not, you see, associate with the common elements. Why, they are so "noble" that they do not even associate with each other!

Just to be thorough, I have to add that there are American chemists who call them "the inert gases." There is some justification for this because the name of one of them, argon, is the Greek word for "lazy" or, more politely, "inert." However, the term is rather misleading because some ordinary gases such as nitrogen or carbon dioxide can be rather inert too, depending on circumstances, and are so called in industry. To call the rare gases inert gases can (and in the classroom *does*) lead to misunderstandings.

For reasons which will become apparent in a moment, it is necessary to give a table of these gases, together with their atomic weight.

Name	*Meaning*	*Atomic Weight*
Helium (*He*)	sun	4.0
Neon (*Ne*)	new	20.2
Argon (*A*)	inert	39.9
Krypton (*Kr*)	hidden	83.7
Xenon (*Xe*)	stranger	131.3
Radon (*Rn*)	- - -	222.0

Radon was originally named Niton (shining), but the name was later changed to indicate its close relationship to radium.

THE REASON for giving the weights is this: As the temperature increases, the velocity of the molecules (or atoms) of a gas increases, too, and for a given temperature the lighter gases have, of course, higher velocities.

Since the escape velocity of the Moon is not very high — 1.5 miles per second — the



OUR MOON, area of the *Mare imbrium*
"so clear that you can see there is no air there."

Photograph by Mt. Wilson Observatory

molecules (or atoms) can reach this escape velocity if the temperature is high enough. Then they will simply depart for unspecified points somewhere in space, the lighter gases first. The surface temperature on the Moon can be 135° centigrade (275° Fahrenheit) and a useful rule, first stated by Dr. Harold C. Urey, is that it will not be able to hold onto anything with an atomic weight less than 60. Now this seems to restrict the list of the gases which could stay at the Moon's surface to the last three, but radon is a kind of theoretical case only. It is radioactive with a half-life of only 3.85 days, so that it disappears for reasons of its own.

In reality, then, the Moon can hold krypton and xenon.

Theoretical reasoning says that it should be mostly xenon, because xenon-129 must be produced steadily from the radioactive isotope of iodine, iodine-129. The number of xenon atoms produced per second on the Moon must be about 5000 million. The production rate of krypton is far lower, so that the lunar "atmosphere" would be likely to consist of 95 per cent xenon and 5 per cent krypton.

Radioactive processes always produce helium at fairly high rates, but helium is too light to be kept by the Moon. Neon is also too light, but argon is an interesting borderline case. Its weight is about 40, which is lighter than the lower limit postulated by Dr. Urey. On the other hand, that figure of 275° Fahrenheit is rather high and so might the production rate of argon be. The source of argon would be the radioactive isotope of potassium, potassium-40.

As Dr. Isaac Asimov pointed out, 3600 grams of potassium-40 are likely to decay every second. Eleven per cent of this potassium-40 turns into argon-40 (the remainder becomes calcium-40) which means a production per second of nearly 400 grams (close to 14 ounces) of argon-40. Even though a good percentage of this argon must dissipate in space, these figures indicate that the lunar atmosphere should be composed of argon, krypton and xenon.

Possibly traces of another gas must be added, carbon dioxide. Last year the Russians observed a phenomenon on the Moon which they described as a volcanic eruption. English and American astronomers did not doubt the observation itself, but inclined to the belief that it was a carbon dioxide outbreak, which carried surface dust up with it and therefore looked more substantial than it really was.

Now the molecular weight of carbon dioxide is 44, just about the same as argon. Therefore the same reasoning applies to it, but the question mark is the production rate. The only source of carbon dioxide on the Moon would be volcanism — and the most anybody can say about this is that there might be some lunar volcanic activity left — with fairly much emphasis on the word "might."

How high this highly attenuated mixture of xenon and krypton with some argon and possibly some carbon dioxide extends is a question which can cause a long and inconclusive debate. At any event, the idea of catching some with a closely orbiting rocket is not feasible. It will need a soft landing of an instrument capsule to find out.

GALILEO GALILEI AND THE LEANING CAMPANILE OF PISA

AT ONE TIME early in his career, Galileo Galilei grew very doubtful about the idea that had come down from Aristotle, namely that the speed of falling objects varies in accordance with their weight. That, for example, an object weighing ten pounds will fall ten times as fast as an object weighing only one pound.

Galileo Galilei was at that time professor at Pisa, the city of the famous leaning tower (which was and is called the Campanile), and one day in 1590, he assembled his pupils and as many of the faculty as he could round up at the foot of the Campanile and he dropped a cannon ball and a musket ball from the top of the tower. They struck the ground simultaneously and from that day on Aristotelian teachings were disbelieved.

Of course it's a familiar story. It can be found in all books on Galilei and any popular book dealing with the history of science.

A few months ago, however, I received a letter from a Mr. Cockroft in New Zealand who had come across an article in an American magazine in which it was loudly stated that this "whole silly story" had been invented by an English writer by the name of R. A. Gregory in a book published in London in 1917, but had since been thoroughly disproved by Lane Cooper, Professor of English at Cornell University.

When the letter arrived I happened to be on a long lecture tour on the West Coast. All I could do at the moment was write a letter in reply, promising to check the facts as soon as I could. I also ordered a copy of Professor Cooper's book.

For the rest of the lecture tour I wasn't quite happy. I had used

the story of Galileo Galilei's experiment from the leaning tower myself, but because it had been a minor incident in my case, I had not specially checked on it. While flying to my next engagement I tried to remember what Galilei himself had said in his famous *Dialogues . . . concerning Two New Sciences.* He did use the famous argument there that the Aristotelian concept was illogical. If a larger stone fell faster than a smaller one, what would happen if the two were tied together? Would they fall still faster because they weighed more? Or would the lighter stone hamper the movement of the heavier one? I seemed to remember that he had spoken of experiments.

A FEW lectures later I had dinner in the home of a gentleman who had a large library. Yes, a biography of Galilei was among his books and it contained the story of the leaning tower and stated that Galilei (who was then about 26 years old) had not published anything while at Pisa. My host remarked, after I told him about the inquiry I had received, that the original source was probably buried in a volume with a title like "Correspondence between Galileo Galilei and So-and-so" — such letter collections are always a treasure for biographers but a nuisance for a man who wants to find something in a hurry. For this reason we didn't even try the university library the next morning, though there would have been time to do so.

If this were a story, I would have Professor Cooper's book waiting for me when I came home. Since this isn't a story, it was not. I went on two more lecture tours and forgot all about it. But then Professor Cooper's book (entitled: *Aristotle, Galileo and the Tower of Pisa*) did come and a week or so later I got around to reading it.

It is a most careful work, quoting all the sources in their original tongues as well as in translation. That the general feeling of confusion emerges from its pages is not Professor Cooper's fault. The story itself is confused.

To make it as clear as circumstances permit, let us examine the whole thing piecemeal, beginning with what Aristotle said. "An iron ball of one hundred pounds, falling from a height of one hundred cubits, reaches the ground before a one-pound ball has fallen a single cubit." But these are Galilei's words (from the *Dialogues*) and not the words of Aristotle. Then what did Aristotle himself say? Well, finding that out is not so simple.

Aristotle did not write systematically about motions and fall, which is to say he did not develop a theory of his own. He was arguing against the atomists, whom he disliked, and his statements are meant to show how wrong they were. However, there is one sentence which seems to be the one Galilei had in mind: "For any two portions of fire, small or great, will exhibit the same ratio of solid to void; but the upward movement of the greater is quicker than that of the less, *just as the downward movement of a mass of gold,* or *lead,* or *of any other body endowed with weight, is quicker in proportion to its size.*" This is quoted from his book *On the Heavens.*

Elsewhere (in *Physics*) he stated: "We see that bodies which have greater *rhopé* either of weight or of lightness, if they are alike in other respects, move faster over an equal space, and in the ratio which their magnitudes bear to each other." The Greek word *rhopé* unfortunately is quite rubbery in its meaning; the Latin editions of Aristotle use *velocitas* or *celeritas* (both meaning "speed," of course) where the original uses *rhopé.* But in English the words "impulse," "momentum," "trend" or even "tendency" might be used with nearly equal justification.

ARISTOTLE, then, did not actually speak of "fall, velocity of," but of movement, and Galilei's rendering which has replaced the original phrasing might be considered a "popularization."

However, it was "always" taken to apply to the speed of falling bodies too. Ioannos Philoponus, who wrote a commentary on Aristotle's *Physics* in 533 A. D., said that the reasoning was "absolutely false" and that this was one of the cases where the phenomenon can better be tested by observation than by logic. "If you take two masses greatly differing in weight and release them from the same elevation, you will see that the ratio of times in their movements does not follow the ratio of the weights, but [that] the time difference is extremely small; so that if the weights do not greatly differ, but one, say, is double the other, the difference in the times [required for falling a given distance] will be either none at all or imperceptible."

Now that we know the concept Galilei was fighting, we come to the crucial point. When did he drop the cannon ball and the musket ball from the leaning Campanile and what did he say about it himself?

The answer, surprisingly, is that he *never* said a word about

it. In his writings (and not only his published books but many of his letter are known) he never even mentions Pisa's Campanile. And while he wrote much later that one could easily test his ideas by dropping weights from a high place, such as a tower, he nowhere says that he did it.

Then who originated the story?

It can be found for the first time in a biography of Galilei by Vincenzio Viviani. Viviani completed his manuscript in 1654, twelve years after Galilei's death. That it was not printed until 1717 is probably unimportant; it was then customary to let manuscripts and handmade copies of manuscripts circulate among learned men, like Vincenzio Viviani himself.

Viviani described the great event in rather dry language. He said that Galilei had disproved many of the conclusions of Aristotle: "among others that the velocities of moving bodies of the same material, [but] of unequal weight, moving through the same medium, did *not* mutually preserve the proportion of their weight as taught by Aristotle, but all moved at the same speed; demonstrating this with repeated experiments from the height of the Campanile of Pisa in the presence of the other teachers and philosophers, and the whole assembly of students . . . "

Three things will be noted: Viviani does not mention the weights of the bodies dropped and does not say what they were. He also does not give the year — but since Galilei was in Pisa from the latter part of 1589 to the early part of 1591, as he says elsewhere, he probably did not think it necessary to be specific. But while everybody else at a later date spoke about *one* dramatic demonstration, Viviani calmly said "repeated experiments."

THE historical problem here is, of course, the reconciliation between Galilei's own silence and Viviani's statement. Before I get to this, it must be mentioned that Galilei's experiment was not as unique as it is usually portrayed. Hieronymus Cardanus, in his book *Opus Novum de Proportionibus,* published in Basel in 1570, began a chapter with the straight statement: *Si duae sphaerae ex eadem materia descendant in aëre eodem temporis momento ad planem ueniunt.* "Two spheres made of the same material, falling in (meaning through) air, will arrive at a plane at the same instant." The word "plane" is to be understood in its mathematical sense; the illustration given by Cardanus looks as if he had a table top in mind.

And the Dutchman Simon Stevin, in a book published in Leyden in 1605, wrote: "The experiment against Aristotle is like this: take two balls of lead (as the eminent Jean Grotius . . . and I did some time ago), one ball ten times the other in weight; and let them go together from a height of 30 feet down to a plank below . . . the sound of the two in striking will seem to come back as one single report."

And at some time before 1612 a defender of Aristotle, Giorgio Coresio, did drop things from the tower of Pisa. Another man, Jacopo Mazzoni, had made such experiments finding Aristotle wrong.

Coresio said that this was due to the fact that Mazzoni did not go high enough; he probably just dropped things from his window, whereas Coresio had gone up all the way to the top of the tower and at this great height had found Aristotle's assertion correct.

Am I, in quoting all these other authors, delaying a decision of the main question? No, I have quoted these contemporary facts because their existence, in my opinion, is the clue to the historical riddle.

The riddle is the silence of Galilei himself — unless he used Viviani as his mouthpiece. This is what the editors of the Italian edition of Galilei's works believe, namely that Galilei told Viviani about the Pisa experiments when he was old. There is no doubt that they had close personal contact and it is known that Galilei was blind for the last five years of his life. He might very well have told Viviani things which he had never written down.

He might even have said something that wasn't so. History is full of statements ascribed to voluble old men which could not be checked and which are, to say the least, doubtful. There is no reason to think that Viviani invented the story. Galilei himself might have, but I don't think so. That he did not mention it earlier in his writings can have several reasons.

ONE assumption is that he did mention it in some early letters which were not kept by their recipients or were destroyed by accident before they saw print.

Another possibility is that, being busy all his life and often harrassed, he just didn't. That such a thing can happen is within my own experience. Some time ago I came across a discussion, bolstered by high-speed photographs, showing that if you drop a drop of milk in water the resulting splash will carry some of that milk upward. Whereupon

I told my wife that I, as a schoolboy (about seventh grade), amused myself by trying to hit a floating piece of wood with thrown pebbles and discovered that the splash from a stone was clean, while the splash from a clump of earth was decidedly dirty. It had at that time intrigued me so much that I forgot all about the floating wood and even called classmates to watch the effect. I may have missed a "discovery" by waiting for others to photograph drops of milk.

In thinking all this over, one point occurred to me which I haven't seen mentioned anywhere else. Modern writers have made much of the paramount importance, the decisiveness, of the drop from the Campanile. If it had been so decisive, contemporary literature should be full of it. Since contemporary literature literally doesn't say a word, the German Emil Wohlwill (in 1909) was the first to conclude that the whole story probably was not true. And Lane Cooper, a quarter century later, drew the same conclusion for the same reason.

But what if the experiment, though carried out "repeatedly" as Viviani says, simply did not impress the contemporaries?

We do have convincing and much more recent examples.

Everybody in the airplane and airline business now makes a large to-do every December 17th about "Kitty Hawk Day." But the actual Kitty Hawk Day, when the Wright brothers flew for the first time, hardly got into the newspapers. *All* the recognition originally received for the first flight could be reprinted on one page of this magazine.

Likewise March 16, 1926, is the day the first liquid-fuel rocket in all history (Goddard's) lifted itself off the ground. Historic day, isn't it? Again the publicity received would fit this magazine page — and the editor could specify nice large type because of the importance of the event and the meagerness of the recognition. Sometime in 1932 the first Russian liquid-fuel rocket (Blagonravov's) rumbled upward. Certainly a historic date, too, but it seems that even the Russians do not know the date; I have only seen the year mentioned.

And the first liquid-fuel rockets in Germany (mixed system Oberth, Riedel, von Braun and Ley) received publicity only because we made it — we needed publicity to raise money.

It is quite conceivable that Galilei rounded up his students and some faculty members, made the demonstration — and did not impress anybody. This would be reason enough for his later silence. All the more so because he could not even claim priority, since Cardanus had written about it in 1570, twenty years prior to Galilei's Pisa tenure, and even Simon Stevin's book appeared ahead of Galilei's own *Dialogues*. If the Pisa experiments did not impress anybody, Galilei had no reason to talk about them in his later works. They had not made him famous and they were not even new.

Until he reached old age and had stopped being active and started reminiscing.

NOTE ON EARLY SCIENCE FICTION

"CAN ONE really doubt . . . " intelligent life has developed on other planets [somewhere in our galaxy] and that these intelligences have learned how to build interstellar ships that they have used these ships to colonize countless other planets that they might have had to destroy painlessly unsuccessful evolutionary developments on such other planets to replace "painful evolution by painless colonization" that they have left other planets undisturbed "as a biological reservoir" [or as control experiments, as we might call it] . . . and that they have refrained from communicating with us [and possibly other planets like ours] waiting for us to take the first step in interstellar communication?

Let me say first that these thoughts were written down in about 1933, but were probably conceived by the man who wrote them at a much earlier age, since in 1933 he was over seventy years old.

Now stop for a moment; don't read on. Try to figure out who said this.

The answer is:

Not a science fiction writer, but Konstantin Eduardovitch Ziolkovsky, who wrote the first of the modern treatises on space travel in 1898 and saw it published in 1903.

ANY QUESTIONS?

I saw an article in a photographic magazine proving that the pictures which the Russians said they took of the other side of the Moon are fakes. Where does that put us in the space race? I have also read that the Russians claim to have discovered a new planet beyond Pluto. Is there any truth to this?

Erwin Richter
Farmingdale, Long Island.

As for the first item, I can only say that all reputable scientists the world over accept the pictures released by Russia as genuine. Personally I don't

have the slightest doubt. That somebody crops up with the intention of keeping his eyes firmly closed is no novelty at all. For instance, I recently got a phone call from somebody who still maintains that the Earth is flat. So this "revelation" has absolutely no bearing on the space race; we still are where we were before, several years behind, with no prospect of narrowing the gap during 1960 and little chance for doing this in 1961.

As for the "discovery of a major planet beyond Pluto," I can report that this isn't so — the "claim" seems to have been a mistake in translation. The actual story is that the Russian astronomer Edward Denisiuk, at the observatory near Alma-Ata, photographed an unlisted "object" in August 1957. He did not then know what it was; it could have been a new comet. Near the end of 1959 the "object" was found on other plates taken in 1957 and a preliminary orbit calculation could be made, proving that it was an unlisted asteroid. Just who changed this into a "trans-Plutonian planet" will probably never become known. The culprit has not owned up yet and it seems very unlikely that he ever will.

How many elements are there now, including the man-made ones?

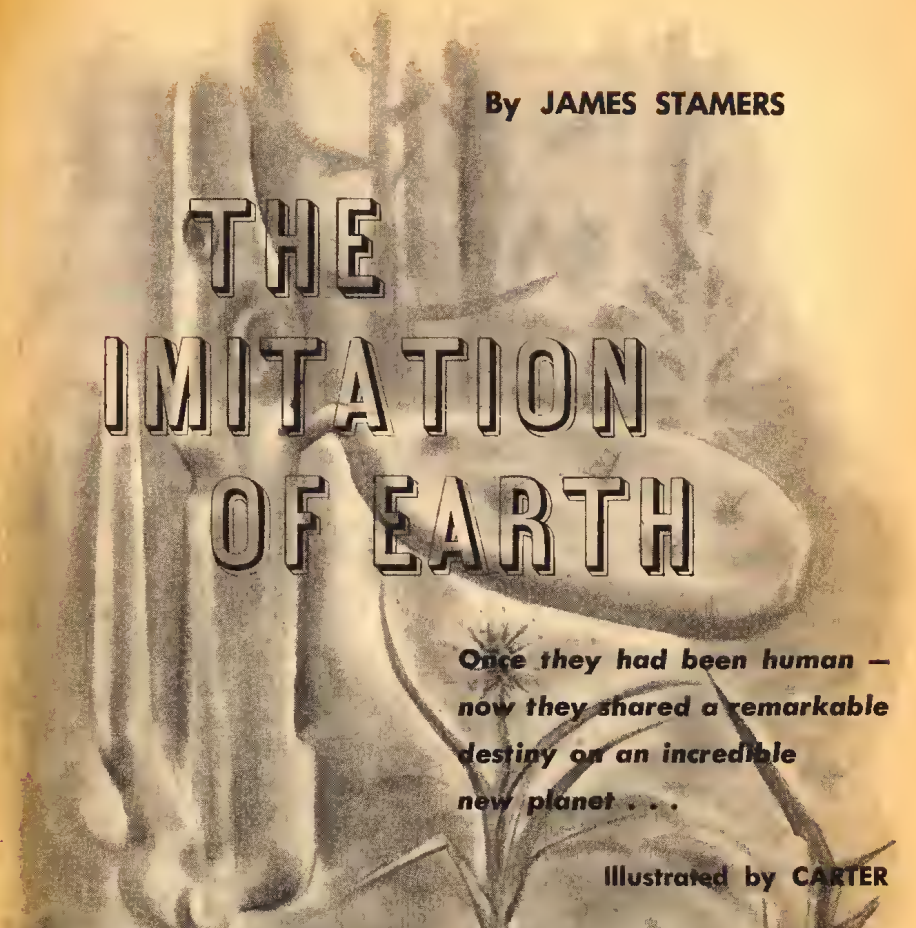
Welson S. Mann
Hollywood, Calif.

The usual statement is that there are 92 elements, from No. 1, hydrogen, to No. 92, uranium. But actually three of these 92 do *not* occur in nature. They are No. 43, technetium; No. 61, promethium (formerly called illinium); and No. 85, astatine. On the other hand No. 94, plutonium, usually a man-made element, does occur in nature, though in quantities far far smaller than even radium.

The man-made elements, so far, are No. 93, neptunium; No. 94, plutonium; No. 95, americium; No. 96, curium; No. 97, berkelium; No. 98, californium; No. 99, einsteinium; No. 100, fermium; No. 101, mendelevium, and No. 102, nobelium.

However, the ones above plutonium have been made in such small quantities that they would be invisible to the naked eye, in some cases invisible even under a laboratory microscope.

— WILLY LEY



By JAMES STAMERS

THE IMITATION OF EARTH

Once they had been human — now they shared a remarkable destiny on an incredible new planet . . .

Illustrated by CARTER

HE was in some dark, moving medium which pressed him gently and released him and pressed against him again with irregular rhythm. He could not feel his hands. He could not feel any part of his body, except a sort of itching in his calf.

He thrust downward to relieve this mild irritation and, surprisingly, seemed to rise up. He seemed to be alive. He had no idea where, or even when, or whether these were valid questions, for the ship had been entering hyper-spacetime when they hit the asteroid belt. Warps and elongations took place in hyper-spacetime. Perhaps he was now a hyper-spaceman.

He could recall his name. It was John Shepherd. He could remember objective events such as Doc-

tor Adelitka Wynn creating a scene in the Mars terminal bar. Her sociology was better than her sense, as she accused him of making a pass at her. He would have liked to, perhaps, but ship's etiquette said: "Crews date, captains wait, space is not the place." He and she had been the last alive, and the last image he had seen on the screen had been a sun. Whose sun, which sun, and where were just uninformed speculations. But he was alive and conscious of himself. And he was buried deep in something.

He tried to define his feelings.

The alternating pressure of the darkness was felt only in one spot, in the area of his heart and about the size of a small bean. The occasional itching came from below this. He thrust again and again rose upward. Yet he had no heart, or no sense of hearing, for he could hear no sound of pumping. After several years in space he was only too familiar with the sound of his own blood circulating in his veins. The voids of space turned men into especially noisy bodily orchestras. There was none of that now.

He thought of himself as having the shape of a man, but perhaps that was just habit. The only area he could in fact feel was the bean slightly higher than his middle . . . and a column perhaps attaching him to the bean . . . and this itching down below, in what seemed to be one doubled-up leg. He thrust again and again, rising higher each time. There was nothing else to do. He never felt tired. He never felt anything, except the itching.

EVENTUALLY he felt a slackening on the upward pressure. He had kicked with his one leg, risen and found no resistance. Warmth played over him and he uncurled his head. So he had a head.

Habit had accustomed him to seeing with his eyes, from one set focal point. It was some time before he found he could see, in a general way, from any point on his exposed surface.

He could even see parts of himself, where the edges doubled over. It was like being able to run round a large gallery on the top of a dome, looking out at the view — and yet being the entire dome. He was green! He looked down beneath him and saw a long green pillar, tubular and shiny, rising out of a brown background.

He could still feel the beating pressure down below. It struck him that he was a plant, growing from seed which presumably his liquified, atomized or dissolved body had provided, and emerging on the surface of a planet.

Immediately overhead a bright orange satellite swung through a brilliant yellow and white sky. Unless there were two suns here, this was no more than a satellite body,

trapped in orbit, for he could feel the fierce beat on his surface from another source on the other side of the sky. This was a vast fiery globe traveling at immense speed.

He felt a vigorous thrusting inside his structure as he expanded. But darknesss rushed up from the bottom of the pit in which he stood, and cloud came in to mask the sky.

The general inference was that he was on a very warm planet around which the bright orange satellite swung, and that both were circling the hot sun at a speed far exceeding that of Mercury. Naturally that was only a subjective impression. But the little he had seen did not suggest any system he had ever heard of. He curled up.

Each time the sun went past he grew further out toward the edge of the pit. He branched and clung to the earth with subsidiary tendrils. It was exactly as though he were clawing with fingers into the earth, except that he did not remove them but simply grew on past them. When he reached the top of the pit, and accustomed his seeing to the greater distances now before him, he saw a violently active world of fire and steam. The ultra-rapid rotation of this planet made day and night into the flickering of a primitive film. Mountains of earth were raised up, broke off and shattered. Remote volcanoes fizzed into action briefly like fireworks and faded, their tremendous display spent. Whole swamps heaved and moved with internal motion. He became big enough to be able to lose a side creeper without giving it a thought. He felt no pain.

There were advantages in being a plant, and particularly in being an apparently highly active creeper. He could see from any point in his enormous network. He could organize races between his outlying tendrils. He found that the orange satellite exerted quite a strong pull on his internal sap system, which was not unpleasant.

THE first sign of life other than himself, oddly, came up from a neighboring pit.

It lay within the area he had grown over, but he had never bothered to send down shoots and side creepers into it. It was a peculiar sensation to recognize — Dr. Adelitka Wynn.

He sent out a sly root and detected that she was a bulb formation. Her indignation was transmitted violently along the ground, in a series of sharp shocks. She stood in tall sheaves of broad-bladed grass which rustled in the wind. He found it was intelligible, though of a different timbre than the deep, rough scraping he made with his own hairy leaves.

"Kindly keep to yourself," she said in effect.

Her leaves had a high hissing note. He marveled that she had

managed to retain the same unpleasant approach to life.

She was objectionable again when she had filled her pit and found she could not extend onto the flat earth beyond, because he had already covered the area.

"Come on," he said. "We've got the whole world to ourselves."

"I can't," she answered hissingly. "You have spikes on your stems. They'll tear my leaves."

He shut off the sap from a whole subsidiary system, killing it. She spread over his withered shoots and leaves without a sound of acknowledgment. They both developed toward the marshes.

As he approached, leaving her slower bulb-formation behind as he raced tendril ahead of tendril down the slope, he saw there were other forms of life, in the water.

He said nothing. But he quietly doubled his thorns and built up a reserve in his advance tendrils, so that he could rush an armored shoot across the ground at high speed if necessary. The aquatic life moved and died extremely fast. Whole species expanded from a single specimen, and for no visible reason extinguished themselves. Life on the planet did not seem to be stable. It was highly experimental. He had been down at the marsh for some time before the first crablike object came into existence and began to leave the water in fitful dashes. He gave it an early dose of his thorns. Thereafter it left him alone.

The former Dr. Adelitka Wynn, however, approached the marsh without looking.

He watched with satisfaction. She was a golden brown and tender green, and highly succulent apparently to the crab tribe. She cried for help.

They were, after all, the only two of human origin on the planet. So he put his reserve to work and sent an armored set of shoots racing across the ground as a barrier between her and the marsh. The crab tribes retreated.

"Thank you," she said, regenerating her clipped stems.

"That's the first time you've ever said that," he said hoarsely.

"I'm sorry. I am . . . really glad you're here."

"How glad?"

"This is a most peculiar world," she said, changing the subject. "I don't recognize it at all."

He said nothing but sent out an advancing barrier of thorns to clear a small area of marsh for her. He performed small services with his roots and tendrils, levering apart her bulbs where they were in danger of rotting, brushing small insects off her leaves when they became established in colonies. His main trunk was now thicker than the body of a man, and he covered several miles. In the marsh, his shoots were thick and black, standing like dark fingers deep into the ooze. Out in the drier areas, which seemed to be spreading, he modified his system to conserve internal moisture. He grew fine multitudes of hairs against the heat and predatory insects. Dr. Adelitka Wynn covered several acres herself, surrounded by his thorn barriers.

WHEN she felt well established, she flowered in great blue blossoms, heavy with orange pollen. He had been waiting, and flowered all along his immense length in every color of the spectrum, mile upon mile of wide flat flowers, open and ready for the breeze. She did not protest. He sent clouds of pollen from his anthers, turning the landscape into a fine mist that drifted over her. He covered her with several pounds of fine golden dust.

"Thank you," she said.

He wondered whether she would produce a bulb like her or a young creeper like himself. He kept young tendrils hanging around her like a catcher's glove, until she told him to go away and let her seed in peace.

She seeded in a particularly stormy period and in profusion. She did it with a gusto and variety that amazed him. Seeds with airborne devices, parachutes, airvanes, twirling rotators, balls of down, with hard shells, soft shells. She even kept some pods, and, with a gesture almost tender, allowed ripe seeds to fall into his waiting leaves. He passed these very slowly and carefully along his system, from cup to cup. He cleared a slope near the marsh and brushed deep furrows with his thorns to put the seeds in. He planted them gently and grew an open lattice of thorny stems above them, so that only the sunlight could get in. As they grew, he retreated his protective screen to allow them air and free ground of their own. They shot up straight and tall, saplings headed for the stars.

The other seeds had taken hold in remote regions, in marshes, on the rising and falling mountains, and in great flat stretches of pulverized volcanic dust. He found he was aware of them and could, by concentrating, even gain a vague impression of the ground around them, as if each were a locus of his consciousness. He also found a telepathic link now existed between him and their mother. It was vague at first but it became clearer, eventually superseding speech between them.

None of their children had flowers. Only the two of them flowered, pollinated and seeded with regularity. Their seeds spread in a variety — and variety was the word, for in the first seeding she had packed as many variations as she could imagine. There was, in his opinion, too much emphasis on

grasses after her own general style and too few creepers like himself. But that was a small detail. The original form did not last long in any case. Some of his seedlings had been enclosed by the rising marshes and were now more comfortable under water than above. A few wilder members even retained a measure of mobility and spent their lives floating from place to place.

HE did not entirely approve of this. But, as the marshes grew under the constant rain and acquired an unpalatable saltiness so that they were virtually seas, he saw the sense of this development. He now covered, by himself and in proxy through his seeds, almost the entire land area of the planet. She extended just as far. They came to a working agreement to leave certain areas primarily for the grass-like progeny and others for his more treelike seedlings. The global view led them both to consider the same experiment.

There were occasional worms and crablike creatures, minute bodies floating with his somewhat gipsy water-seedlings, but they and their own seeds were the only significant forms of life on their planet.

"Shall we see what we can evolve?" he suggested.

"I had that thought myself," she answered.

"At least we know the end product. It seems unlikely, now, but man must have come from much this environment on Earth."

"Very well. Where shall we start?"

"I have some enterprising water-plants," he said diffidently.

"*W*e have."

It was an ambitious program. But, on the other hand, life on Earth had presumably also developed against all probabilities. Here on their planet they could provide continual intelligent guidance.

They went out into their water-plants and sensed through their miles of sensory surfaces the most favorable areas of the planet. They encouraged the water-plants to breed, cross-breed and extend. They fed fractional parts of themselves to each other, loaded certain areas with nutrient life, encouraged mobility.

Great continental areas rose and sank. Generation after generation was rapidly produced and as rapidly developed and died. The planet was littered with the remains of unsuccessful experiment. But, mainly by concentration on iron-rich diets and localizing their sight perceptions repeatedly in one particular part of their species, they produced plants which no longer responded to them. They had separate existence of their own.

At last they managed to lure repeated generations out of the water and onto land.

They had the advantage not of merely controlling the environment but of being the environment. Subject to the violence of volcanoes and the endless shifting of the planet's crust, aberrations in the plane of rotation, and rapid changes of climate, as ice mounted and retreated and heat waxed and waned, within these limits they could and did make arbitrary decisions. By withdrawing from an area, either of them could create a desert. By doubling their rate of growth in a local tributary of themselves, they could create a forest. Their descendant seeds were as much part of themselves as the original trunks. In fact, they rarely distinguished between that original growth and later developments. It came as quite a surprise to them both to find there was not much left of the first bulb clusters and the first sprawling creeper.

ONCE they had induced the more-or-less fishes to leave the water, progress was rapid.

There was never a difficulty quite as great as that again. On land, wherever the land happened to be at the time, they could induce generations of different shapes and sizes by modifying the vegetation – themselves, in their many forms. He took his branches higher and higher in a sparse zone, for example, to encourage the necks of the local animals to extend. They were remodeling their program deliberately on their old Earth, cutting off what they knew to be unsuccessful by-paths and nurturing the developments that should lead to man. The original crablike inhabitants had long since passed away, though they had used some features of these. The insects continued to multiply on their own by sheer probability and without their guidance.

They were both ruthless in their experiments. Once they abolished whole races of enormous vegetarians by withholding themselves in inaccessible areas. Like the dinosaurs, whom they resembled closely, these great reptiles were too big and too stupid.

She blamed him for having allowed them to feed too many generations on too highly radioactive parts of themselves.

"I can't be everywhere at once all the time," he said.

To annoy her, and because he had been a space captain, he encouraged an entirely abortive series of flying reptiles.

His excuse was true. By exerting his consciousness to its maximum, he could be aware of almost all the planet simultaneously, but this awareness lacked intensity and definition.

The comfortable maximum for concentration was about a hundred square miles. If he focused his attention within a square mile, his

roots and trunks and branches hissed with massive life and rapidly propagated themselves into a thick jungle. This in turn multiplied the surface areas and diffused his attention. There was a lot going on in the undergrowth that they both missed.

They almost missed their ultimate triumph.

THE satellite of their planet had cooled. The sun around which they swung was shielded by thick banks of the carbon dioxide they breathed off from their myriad bodies. They had stabilized most of the animals. Despite the repeated cataclysms they had arrived at descendants who could flower just as they themselves originally had flowered.

As a matter of fact, he was quite deeply taken with an offshoot wood of flowering trees. In the guise of honeysuckle he spent most of his time wooing tenderly round their trunks, to the fury of her grasses and the lashing of her reeds.

An object that was a rudimentary improvement on an ape came shambling into the wood where he was and quite idiotically tore off some of his prettier flowers.

On checking, he found there were several varieties of this object in various parts of the planet. None appeared any better than this brute, who whizzed through the trees and bred and died in a flicker of time.

"He'll never last," he said to her. "His metabolism burns out before he has time to do anything."

"He'll reproduce all the faster," she answered. "And leave those trees alone. At your age, really!"

She was right about the prototype brute. Never in their experiments had they produced a creature that was so active. They had raised animals that bred much faster, but none that bred at a reasonable pace and also kept flashing about the planet in a restless motion.

They had to litter the ground with suitable seeds before the humanoids stopped long enough in one spot to try planting for themselves. And even then, the idea did not take root for many many generations. But here and there, at last, they had the beginnings of a culture, and the beginnings of speech. The telepathic content of the humanoids' speech was intelligible to them, though not apparently intelligible to the humanoids themselves.

They concentrated on the temperate zones, where they could most easily encourage the humanoids to stand still from generation to generation. The humanoid dwellings flickered into existence and decayed too rapidly for any reliable observations until several tribes of them took to using stone for building materials.

"Well," he said thankfully, "at last I can tell where they are without dashing from branch to branch like one of your monkeys."

He still did not believe her monkey experiments had had much to do with it. Secretly he suspected she had encouraged that development to annoy him — by putting multitudes in his hair, so to speak. It was just and proper, therefore, that the humanoids trampled all over her grasslands by preference.

It was in this mood that he created cool groves of tall trees and concentrated in them thoughts of love and pleasure.

The humanoids took the hint remarkably quickly. He had many happy generations encouraging the humanoids to sport in his groves. She was furious. But trees were his province and there was nothing she could do about it.

"You're debasing them," she complained.

"They're enjoying themselves, aren't they?"

"Voyeur!"

Well, he frankly enjoyed the swift rush of little pink bodies in and out of the groves. He was sorry when she succeeded in countering with a sterner line of thought, bred out of her deserts and thin-grassed mountains, where she was full of thought of privacy, and continence, and wonder and the stars. When he could, he made life uncomfortable for these higher-minded generations. He was never slow to create sybaritic and sensual surroundings to knock them off their mental perches. In one group of islands — which she could not reach because his pines starved out her seeds before they had a chance to establish — he had a series of permanent statues erected to himself by the humanoids, and he had frank and open worship. He considered it very proper. He maintained a cool and bracing temperature in the trees around the sandy shores.

He had passed through four or five hundred generations of giant redwoods before the little humanoids established themselves in the cities across the planet. Many of their activities were too fast for him to perceive, but he could contemplate their cities.

These were temporary structures, on the scale of the thrusting growth he felt in one of his redwoods. Still, to these dizzy little humanoids no doubt the cities lasted long enough. It was rare now for him to pick up a humanoid thought. Unlike their first models, the present generations thought at the high speed which characterized their entire life. A blurred flicker of an impression to him was apparently the whole life's output of one of her contemplatives sitting in a cave, until he fell to pieces and was whizzed away.

The pink varieties no longer worshipped him, save fitfully, but he still had a pleasant range of

warmer-colored humanoids whom he could tempt into an orgy. This kept him deep in the forests on the central belt of the planet.

SHE signaled to him from across the main ocean. He transferred his consciousness to join her on the edge of one of her wide prairies.

"I think we've done very well," she said.

"Surely you didn't call me all the way here just to say that."

"Yes. It really is Earthlike, isn't it? I felt it was about time you congratulated me."

He thought back.

"I don't remember, now," he said. "But it seems to be roughly similar."

"Roughly! After all this time, you dare to suggest I have only achieved a rough similarity? I was a trained sociologist, kindly remember. It is *exactly* like Earth."

He looked patiently up at the satellite and the stars. She was detailing the achievement interminably.

"It's very difficult to tell," he said, interrupting her. "Our time scale is quite different from what it was on Earth. These humanoids of ours breed and die like ephemerids."

She rustled impatiently.

"If you took trouble to examine the species from their time scale, you would find it is precisely the same as Earth time to them."

"Is it? Very well, I believe you. We have created an exact duplicate of the other Earth. Congratulations."

"You're just agreeing without proof. I have evidence to show the sociology is a detailed replica. These humanoids are repeating human history exactly as we knew it! One of our ivy shoots even reported a tombstone marked 'Killed in the Battle of Bunker Hill, June 17, 1775.'"

"Now you're exaggerating!" he said. "How could they possibly duplicate a time system that applied on the other Earth?"

"What other Earth?" she said.

— JAMES STAMERS

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What a wife! Pretty, smart . . . and when she cooked it was just out of this world!

cry snooker

By ANDREW FETLER

Illustrated by DICK FRANCIS

"BABY DOLL," George called from the bathroom.

There was no answer.

George wrapped a towel around his rump and came into the living room. Rosy sat curled up reading a magazine.

"Do me a favor, Rosy," George said. "Put caps on bottles so your perfume won't evaporate. I paid twelve bucks for that Chanel."

Rosy looked up at him, stretching her neck a little.

"And next time close the damn Bendix so I won't have to swim through the basement to shut it off."

"I told you, the catch wouldn't catch."

"The catch would catch all right if you didn't leave Timmy's diaper hanging out."

"That's not fair," Rosy said. "Blaming little Timmy."

His hands tried to crush an invisible bowling ball. "Just a little ... presence of mind, Rosy. Okay?"

"You dropped your towel," Rosy said, looking away.

George ran into the bedroom and came back in his pajamas. "For God's sake, honey, *try* to remember what you're doing when you're doing it. Like with the power mower."

"I suppose *that* was my fault?"

"Don't you know enough to cut the engine when you're done?"

"I *wasn't* done. I had to answer the phone, didn't I?"

George threw up his hands. "So all right. So you left it running and it went right through Charlie's fence."

"Sometimes," Rosy said, putting down the magazine, "you exasperate me, George. I *told* you, I put it in neutral or whatever it is."

"You put it in high and let it run through Charlie's fence."

Rosy looked at him as at a bad tomato. "Why," she said, "do I get blamed every time something mechanical goes wrong?"

But they kissed and made up because it was the night before their third wedding anniversary.

AT the breakfast table next morning George gave her the diamond cocktail ring she'd drooled over. Rosy gave him the self-winding time piece he'd slobbered over in Cellini's window. Dear girl, had the courage to get it for nothing down and thirty-six months to pay.

"Don't gulp your food," Rosy said. "It's Charlie's turn to drive you."

In his high chair, Timmy scooped up handfuls of oatmeal and heaved them over the port side.

When Charlie came to the door he had a gift-wrapped box for them. It looked heavy. He gave it to Rosy and slipped on one of Timmy's oatmeal bombs and flew headlong into the couch.

"Happy wedding anniversary, you two," Charlie said, picking himself up. "When are you going to fix my fence?"

Rosy weighed the box in her arms. "Charlie, that's real sweet of you and Beth. Let's open it now, George."

"We're late," Charlie said. He wiped his shoe on the rug. "Come on, pal."

They took the freeway out of Sunnydale. Downtown the clock on the Trojan Life & Casualty building gave them four minutes to get there.

"What was in that box you brought?" George asked.

"A pressure cooker."

"Oh, no."

"Supposed to build up terrific pressure," Charlie said. "Five thousand pounds per square inch."

George stared before him as they drove into the Park-O-Port.

He had not a moment free till his coffee break at ten. Mr. Perkins wanted the Lawndale policies cleared right away and Mr. Zungenspiel had all the juniors in for a briefing on exorbitant rates. When he got back to his desk Maude Doody waited to interview him about his wedding anniversary for her "Sweetness and Light" column in *Keep Smiling*, the company weekly.

"I hope you're always polite to Rosy," Meddlin' Maude said. "I can't stand rude men. How old is Timmy now?"

"He'll be three in September."

Maude made a quick mental calculation. She looked doubtful. "And could you tell us what you gave Rosy for her wedding anniversary?"

"A pressure cooker," George said, forgetting everything else.

"Is that all? What kind of pressure cooker, George?"

"Five thousand pounds per square inch."

"I mean the *brand*," Maude said, stabbing the air with her sharp pencil. "Don't you think the folks would like to know the brand?"

"Uh, I guess the best."

"They're all best," Maude said. "Can't you remember the brand?"

"No," he said.

Meddlin' Maude rose to her feet. She looked down at him severely. "George, you're slipping," she said and marched off to the *Keep Smiling* office.

GEORGE grabbed the telephone. Five thousand pounds per square inch, he thought. Whammo!

The phone rang seven times. Then he dialed Charlie's house, but Beth did not answer either. Rosy and Beth spent hours at the supermart. It was the social center of Sunnydale where the gals could gossip a little and compare brands.

George took the elevator up to the company cafeteria. On the fifth floor Mr. Perkins stepped in.

"Just got your Lawndale policies," Mr. Perkins said. "Fast work, son. Keep it up."

"Thank you, sir. I had an inquiry this morning, sir. About domestic accidents."

"Shoot the problem, son."

"Does it cover injury by pressure cooker?"

"Was it Full Coverage or Complete Coverage?"

"Complete, sir."

"Covers everything from electrocution in the bath tub to getting hit by a stray rocket from Cape Canaveral."

The elevator let them out at the

cafeteria. "Mr. Perkins, I'd like to double my wife's policy."

"Mighty sensible of you, George. Can you afford it?"

"No, sir."

"That's the spirit! How about your own policy, George? Isn't it about time you went up a notch?"

"You mean it, sir?"

"I've been keeping my eye on you," Mr. Perkins said. "I'll see what I can do."

George thanked him profusely.

"Not at all, not at all," Mr. Perkins boomed. "That's what old dad Perkins is here for."

George got his coffee and joined Charlie at their corner table.

"Getting chummy with old dad Perkins?" Charlie asked.

"I just got told," George said, leaning forward, "I could increase my insurance."

"No!"

"Said it was time I moved up a notch."

Charlie clenched his fist. "We *can* make the Country Club, I tell you. I'm almost twelve thousand in the red, not counting the house and the boat. Let's celebrate, Georgie. All four of us. We can go to the Emperor Room for sixty bucks. That is, if you're still talking to your humble friends."

"Come off it."

"I've seen it happen," Charlie said bitterly. "People getting so deep in debt they start snubbing their more solvent friends."

When Arlene dropped the noon mail on George's desk he sat dreaming. More insurance, more credit; more credit, more debt; more debts, more prestige. He sat up with a start and dialed Rosy.

THIS time she answered and all was fine. She'd spent the morning in the supermart filling out contest entry blanks and buying a big roast for the pressure cooker.

"Oh, George, it's a wonderful pressure cooker. It looks like a space ship, with bolts and portholes and all."

"I don't want you to—"

"And it's got a remote control panel or something, with all kinds of buttons and blinkers. Timmy just loves it!"

"Is Timmy anywhere near it?"

"He's *in* it. It's a big one."

Arlene came by his desk. "Where's Charlie?" she asked. "I got a telegram for him."

George waved her away and brought the receiver close to his mouth.

"Rosy, listen," George hissed. "Put that damn thing away till I get home. We're going to the Emperor Room with Beth and Charlie."

There was a short silence. "You said you wanted a home-cooked meal," Rosy said. "To remind you how married you are."

George looked up at Maude Doody standing at his desk. "That



sounds like a personal call," Meddlin' Maude said.

"It's my wife."

"You've been on that phone three minutes," Meddlin' Maude said, glancing at her watch. "You know company policy on personal calls, George."

"I'm a homemaker," Rosy was saying. "I *want* to make dinner for you and Timmy."

"Oh, go to hell!" George said.

Meddlin' Maude clutched at her heart.

Rosy gasped.

Five minutes later:

"Of course I love you, baby doll," George said weakly. In a semi-circle around him stood Meddlin' Maude, Mr. Zungenspiel, Mr. Perkins, Arlene, and an assortment of lesser office authorities. "Just don't touch that pressure cooker till I get home, dammit. It's dangerous."

"I can only do my best, George," Rosy said with hard finality. "If that's not good enough for you, darling"—she choked on a sob—"well, I'm *sorry*."

The phone clicked and the wire went dead.

A dozen faces bent over him. "George," Meddlin' Maude said, raising her sharp pencil.

"Just a minute, Miss Doody," said Mr. Zungenspiel. "Young man, would you step into my office when you have a *free* moment?"

"If you see Charlie before they fire you," Arlene said, "tell him I left a telegram on his desk."

"George," Miss Doody shrilled, her sharp pencil raised, "did you or did you not tell *me* to go to hell?"

Charlie crashed through the crowd, waving a telegram. "Look at this, George!"

George read the telegram:

OWING TO ILLITERATE SHIPPING CLERK IN WESTERN ELECTRONICS SHIPPING DEPT YOUR MAIL ORDER FOR PRESSURE COOKER MODEL G-19-78256D WAS FILLED BY TOP SECRET GOVT CONTRACTED PRESSURE SNOOKER MODEL X-13 WITH TOUCH COMMAND CONTROL PANEL REGRET SHIPPED TO YOU FULLY ASSEMBLED HIGHLY DANGEROUS TO LIFE LIMB PROPERTY & PASSING AIRCRAFT NOT SUITABLE FOR COOKING HEREWITH ADVISE WESTERN ELECTRONICS CORP NOT LIABLE FOR ANY DAMAGE TO LIFE LIMB PROPERTY & PASSING AIRCRAFT AFTER REGISTERED RECEIPT OF THIS TELEGRAM WESTERN SNOOKER X-13 DISMANTLING EXPERT ON WAY BY JET SUGGEST KEEP SNOOKER IN NICE COOL PLACE SORRY INCONVENIENCE CORRECTED ORDER FOR YOUR PRESSURE COOKER BEING FILLED BY NEW SHIPPING CLERK WITH COLLEGE DEGREE HOPE SERVE YOU AGAIN T C FRUMP V-P IN CHARGE OF SNAFU

George dropped the telegram.

"What are you waiting for, man?" Charlie said. "Call Rosy, will ya?"

"She won't answer," George said. "She thinks I don't love her."

"Come on! We better get home before she starts making dinner."

They ran down to the Park-O-Port.

"Ahm sorry, Mistuh Charlie," the snappy attendant said. "Caint git yuh cah now. It's on de top floh behind seven lines of cahs an *dey* aint comin out till five like every weekday sept Satterdays, Sunneys an holidays."

"Give him a tip and let's get a taxi," George said. He ran into the street just in time to flag a cab.

George tossed the cabbie ten dollars. "Step on it. It may be a matter of life and death."

"I could have called Beth," Charlie said.

"We'll get there almost as fast."

They zoomed through the underpass and turned onto the freeway. A cycle cop emerged from behind a Schlitz billboard and took after them, his siren wailing.

"Never mind the cop," George said.

The cabbie hunched forward and gripped the wheel. "Mister," he said, "I've been waiting for a chance like this."

THE cop gained on them and as he came abreast George grew confused. He saw the cop's big sun glasses shining like the eyes of a wasp and his hat snapping in the wind. George had never broken the law in his life. He had a deep respect for the police, preservers of law and order.

The cop motioned the cabbie to pull over. The cab zoomed over a crest on the freeway and ripped down the slope with marked increase in speed.

George rolled down the window and flapped his arms. "My wife!" he yelled.

The cop cut the siren. His hand went down to his holster.

"My wife!" George yelled. "Pressure cooker."

The cop grinned and nodded to say he understood, and roaring ahead waved them to follow. The siren started up again.

They lost him when they turned off the freeway and raced past the supermarket to their street. Sunnydale looked peaceful in the afternoon. George's house came in view. He heaved a sigh of relief as the cabbie pulled to a stop.

"Rosy!" he yelled, dashing up the walk.

He flung open the door and stopped. The house was silent except for Rosy's voice in the kitchen. She was counting backwards:

"Five . . . four . . . three . . ."

"Rosy!"

"One . . . zero."

A steaming hiss sounded in the kitchen. In a moment it rose to a

howling pitch. There was a tremendous crash and a tremor shook the plaster from the walls.

In the settling dust Timmy crawled out of the kitchen with a pot on his head.

In the kitchen Rosy sat on the floor, clutching the instruction booklet.

"Now see what you did, George!"

"What *I* did?"

"Barging in like that," Rosy said, tears of frustration streaking her dusty cheeks. "I must have pressed the wrong button."

Beside her on the floor lay the Touch Command Control Panel. Its colored lights blinked on and off like a pinball machine.

Charlie came into the kitchen with Timmy in his arms.

"Oh my gosh!" Rosy cried, looking up at the ceiling. A hole was ripped out in the roof and through it they could see God's blue sky.

GEORGE grabbed the control panel and they ran outside. They saw the snooker describing a lovely ellipse over Sunnydale.

"My roast!" Rosy wailed.

"It seems to be waiting for orders," Charlie said.

"Have to get it down," George said, setting the control panel on the lawn. "Before it slams into some airplane."

He pressed a large red button. The snooker wobbled for a moment, then broke its orbit and dove for Charlie's house. It smashed in at the back and came out the front. Beth ran out in a bathrobe, screaming.

"Stop it!" Charlie yelled, flinging himself at the control panel and pressing a yellow button.

The snooker resumed its orbit, then wobbled and dove into every second or third house in the street, working the houses from side to side.

Women ran out and stood dazed, clutching their children and watching the snooker.

Desperately George pressed the blue button. The snooker resumed its orbit, wobbled, flew once over the street as if to check what all needed to be hit, then slammed through the whole length of houses from end to end.

Two houses caught fire. Charlie pressed the largest button of all, the green one. The snooker righted itself and flew out over the town. Wherever it struck a small cloud of dust rose in the air.

Four fire-engines turned into the street. Three of them turned around and raced back to downtown.

They lost sight of the snooker for a while. All they saw was the clouds of dust mushrooming all over town, and here and there a fire. When the snooker came in view again, it was rising toward a jet plane circling overhead.

"It'll get hit!" Charlie said.

George pressed all four buttons.

The snooker wobbled for a moment. Then it seemed to shake off the confused commands and rose into the plane's path. The plane veered. The snooker turned after it and rose steeply. Then it dove and slammed down through the fuselage.

They all stared as the plane crashed into the supermarket. Above them the pilot floated down in a parachute. He seemed to see the blinking lights of the control panel and worked the chute calmly. He landed through the hole in Rosy's kitchen. He came out of the house eating a piece of cold chicken.

He wore an air-research uniform with a belt slanted across his chest and high shiny boots, and in his hand he carried a Rommel whip.

HE strode up to George and looked down at the blinking control panel. With the toe of his boot he pushed a black button in the lower left corner and squinted up at the sky, chewing the chicken. The snooker obeyed instantly and resumed its original elliptical orbit.

"*Ja*," he said. "Very goot." He gazed out over the town, the clouds of dust and the fires burning. "Excellent," he said, tossing the chicken bone over his back. It hit Charlie in the face.

"You must be the dismantling expert," George said hopefully.

"I am more. I am the infentor of pressure snooker." He noticed Rosy and Beth. "Ladies," he said, clicking his heels and bowing. "I haf the honor to present myself. Vernher von Wissenschaft, at your serfice."

"Lkiewise," Rosy said. "Could you get my pressure cooker down before it does any more damage?"

"Ha ha!" Vernher von Wissenschaft laughed. "Very goot! Pressure *cooker!* Hm, goot way to deceive brutal enemy. Export five hoondred tausend pressure cookers to enemy homes. *Ja*, I like it."

"You don't understand," Rosy said. "My roast will be ruined if you don't get it down pretty soon."

"You cook rosht in my infention?"

"Biggest roast you ever saw," Rosy said. She hugged George. "You see, this is our wedding anniversary and I'm dying to know how it came out."

"Rosht?" he mused, following the snooker with his eyes and licking his fingers thoughtfully. "Why not? Maybe I make deal on side with Amerikan Kitchen Appliance Inkorporated. If rosht comes out goot." He looked at the broken houses and the firemen spraying the fires. "*Ja*," he decided, "kill two experiments mit one snooker."

He waited for the snooker to pass overhead. Then he gave the control panel a sharp kick with his

heel, breaking it in two. The snooker wobbled and exploded. Bits of steel whirred out over Sunnydale. A brown cloud appeared above them and in a moment they were all drenched in a rainfall of roast beef.

By the time the gravy hit them it had cooled enough to taste.

"It's wonderful!" Rosy said.

"Chust a minute," Vernher von Wissenschaft said. "Scientific experiment not so fast." He removed a shred of roast beef from behind his ear and chewed.

"Isn't it good?" Rosy asked anxiously.

Vernher von Wissenschaft finished tasting. He thought a moment, stretched his face. "Excellent," he said.

"Do you *really* like it?"

"Ja, excellent." He held up a finger. "Perhaps," he suggested, "two more grains pepper."

TWO weeks later, when all the fires in the town had been put out and the damage assessed, a great banquet was held in the Emperor Room to honor George. In the street a huge crowd of well-wishers waited to greet him as he came out. The Emperor Room could accommodate only the town's important personages; there were so many of them that some of the best families did not bribe the mayor in time to get a seat.

But George managed to get standing room for Mr. Perkins and Mr. Zungenspiel.

Beside George at the table of honor sat Charlie. Next to him Vernher von Wissenschaft in a splendid uniform, cracking his Rommel whip from time to time. Everybody who was anybody was there: the Police Commissioner, the Gambling Czar, the District Attorney, the Teamsters' Boss, Senator Smiley, Coroner Schadenfrohm, the Election Commissioner, the Slum Owner, the Housing Inspector.

"Never before," the mayor orated, "has so much damage been done by such a little man in such a short time."

Vernher cracked his whip. "Very goot," he said, turning to George. "Rhetoric, you know."

"The national economy," the mayor continued, "was in danger of imminent collapse ever since our old-fashioned P.O. — planned obsolescence — reached a point of no return. We had to produce more and more until the market was glutted. Of course we would not sell so much as a toaster to our brutal enemy." (Applause.)

Vernher cracked his whip. "Very goot."

"But now," the mayor said, smiling at George, "the solution to our economic impasse has been found! This young man had the daring vision to contribute a brilliant new concept to our economics. S. D. — Senseless Destruction!" (Applause.)

Vernher cracked his whip. "Excellent."

The mayor raised his arms for silence. "I have good news," he said. "Congress has just voted one billion dollars for Senseless Destruction research!" (Wild applause.)

Vernher cracked his whip six times.

"I can promise you, ladies and gentlemen," the mayor continued, "what happened to our town is only the beginning. As a result of the visionary experiment by this daring young man, fifty thousand idle construction workers have already been put back on the job; twenty new banks have sprung up to handle the flood of mortgages; a new steel mill will be erected in our world-famous game preserve. But I need not go on. The industries, businesses and stock markets that will profit by Senseless Destruction can hardly be numbered. The biggest boom in history is on! And as long as we have the snooker it will never end!" (General pandemonium.)

When order was restored, the mayor turned solemnly to George and said: "In grateful recognition of your . . ."

After the recognition speech George accepted humbly the following sums, not listing gifts under $10,000:

$10,000 from Home Builders Assn.

$12,500 from Construction Union, Local 256.

$15,000 from Last Bank of America.

$11,276.88 from Unified Steel Corp.

$20,00 from Chicago Furniture Mart.

$10,000 from Congress in Series E Bonds.

George also received the following appointments:

Special Adviser to Mayor on Senseless Destruction, with nominal yearly income of $75,000 tax free.

Vice-President of Trojan Life & Casualty Co.

Chairman of the Board of Trustees, Sunnydale Game and Wood Preserve.

Honorary Supreme Commander of Juvenile Senseless Destructionists, to be organized.

A YEAR later George sat wearily in the control room of his chateau on Indian Rock overlooking the town. Snookers buzzed over rooftops like flies. Clouds of dust rose prosperously everywhere. In the streets construction gangs raced in speed trucks.

George had begun to wonder how it would all end.

After the novelty had worn off, Senseless Destruction became more monotonous, more depress-

ing than the Installment Way of Life before it. People worked harder than ever now and had less to show for it. Of course, it was unpatriotic to have anything to show for it. Nobody in his right senses would argue against Round-the-Clock Employment for All. And if you didn't go around grinning and saying how happy you were with your seventh mortgage, people began to suspect you.

George had talked it all over with Rosy and she agreed. Sure, it was all right for *them* — for the time being. But George had begun to despise himself.

He had to keep sharp control over the snookers. Some of them showed a tendency to sneak off course, looking for some nice fresh target — like the chateau, maybe.

The butler came in and presented a calling card on a silver platter.

"Vernher! Show him in at once."

Vernher von Wissenschaft marched in, cracking his Rommel whip. He looked worried.

"Bad news," Vernher said, shaking hands. "Chust come from the President."

"How *is* Charlie?"

"Goot. But too much work. And trouble. These snookers." Vernher strode to the window and looked out over the town.

"They're doing a fine job," George assured him.

Vernher turned. A grim smile slashed his face. "Too goot. Russian economy caught up with ours. They vant snookers too. Must have snookers or they go kaput."

"What's so bad about that? Let them go kaput. Cold war will be over at least."

Vernher shook his head. "They threaten atomic war if they don't get snookers. This time for real."

GEORGE gave a low whistle.

"*Ja*," Vernher sighed. "Charlie had secret cabinet meeting. We cannot take chance. You must go teach them how."

"Can't you go?"

"I'm leaving for Johannesburg tonight. United Africa also caught up."

"As it is our economy barely keeps ahead of the Russians!"

"*Ja*. But cannot be helped."

"Maybe," George said, "if you invented something bigger, better, more efficient."

"You think I haf not tried?"

George stood thinking a long moment. He said, "Vernher, is there no way out?"

"Sure," Vernher laughed. "If we go back to savage pre-civilization."

"All right," George said. "I'll go tell Rosy. Watch the control panel a moment, will you? Especially the Eastern Section."

"What's the matter with them?"

"They seem to be getting restless lately."

"Nonsense! My snookers haf no emotions."

"Just seems that way sometimes," George said, going out. Their job could even make stones feel something, he thought.

He ran down to Rosy in the kitchen. She had consented to having servants only because of her social position, but she still insisted on personally running the kitchen her own way.

George pulled her into the hallway and put his arms around her and kissed her.

"What on earth?" she said.

"You must be very brave, darling." He fixed her with his eyes. "Rosy, this is *it*."

"It?"

"E-Day."

E for Escape.

"We can't talk now," he said. "Vernher is at the controls."

"Can I change?"

"No time. Are the suitcases packed?"

"They're in the garage, behind the beer barrels."

"Go get Timmy," George said. "I'll drive the station wagon round to the back door."

At the gate to the grounds they stopped and took a last look at the chateau. They could see Vernher standing in the control window. He seemed to be enjoying the spectacle in the town below.

Rosy gripped George's arm. "Look!"

A snooker had strayed off its orbit and was hissing in toward the chateau. It came fast over the grounds, heading straight for the control window.

Vernher never saw it coming. Probably he did not even hear the glass crashing as the sharp slivers shot into the room.

BY the end of May George was still chopping a small clearing in the Montana woods. George and Charlie's old campsite. It was harder work than he'd expected. But it was a good site and the tent would be replaced by a heavy log cabin before winter set in. Sometimes they'd climb one of the peaks on the Flathead Range and sit gazing at Hungry Horse Reservoir in the distance.

The trees were stubborn here, blunting the ax. But they'd make it all right. George sat down to rest.

Rosy waved to him from the potato patch. A strand of smoke rose peacefully from the stone oven. He waved back and grinned.

Timmy worked his way up bravely to where George sat. He'd gotten used to his bark shoes and had quite forgotten that he had ever worn any other kind.

"Can I help you, Daddy?"

Education too, George thought. The *real* kind. "No, thanks, son," he said. "You'd better help your mother plant the potatoes."

That evening at supper, as they

sat enjoying sundown and the quiet of woods and mountains, they heard a motor far away. The wind took it away and then it sounded much nearer, grinding in low gear. George stood up as a jeep came round the mountain. In it sat a man and a woman.

The jeep came into the clearing, swaying over stones and roots.

"Charlie!"

"Hi," Charlie said. He helped Beth down.

George yanked Timmy to his feet. "Stand up, son. This is the President of the United States."

"I got a present for you, George," Charlie said.

"Not another pressure cooker!" Rosy said.

"A peace pipe," Charlie said.

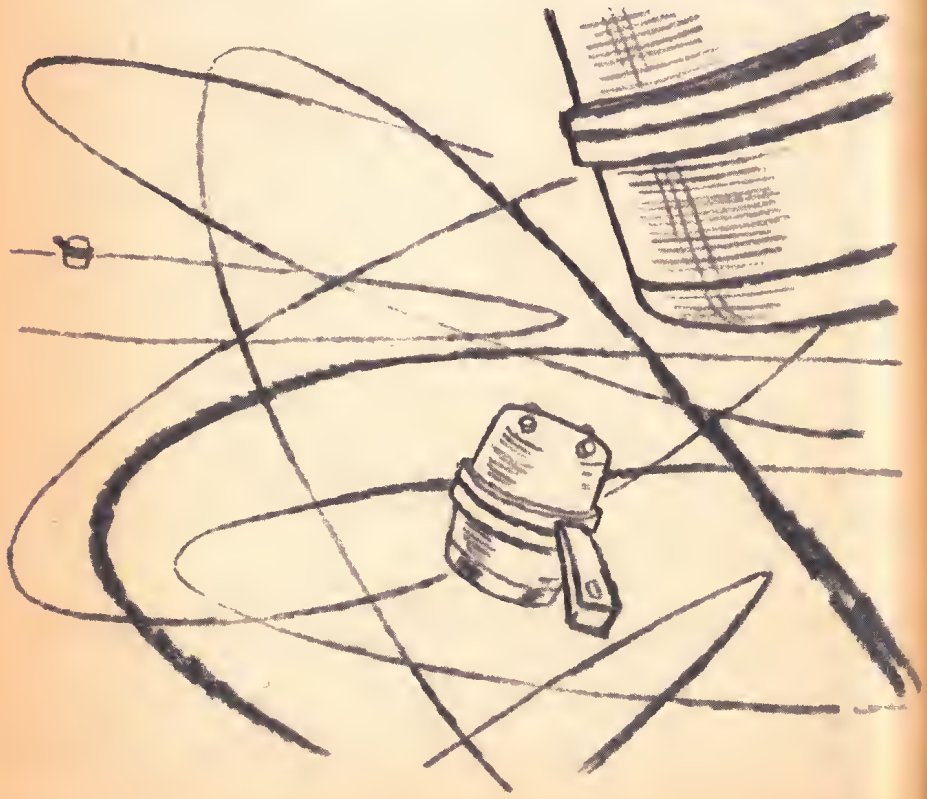
Timmy's big round eyes took him in. "Are *you* the President?" he asked in a small, awed voice.

"Not any more," Charlie said.

George stared at him. "You didn't give up the White House?"

"What else could I do?" Charlie said. "I gave it back to the Indians."

— ANDREW FETLER



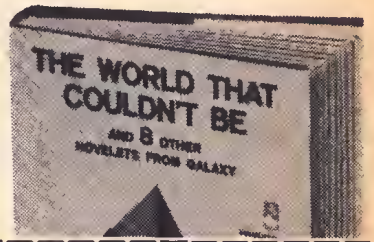
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BY NEAL BARRETT, JR.

The Stentorii Luggage

Rule 1 for interstellar hotel keepers: If a guest calls Room Service for a snack, he may mean the keys to his neighbor's room!

Illustrated by WOOD



THE Double-A call light wailed and blinked itself into a bright red hemorrhage on the wall. I woke up fast. My first thought was fire. Logically, reasonably, I know there hasn't been a hotel fire in 800 years — but tradition is tradition.

I punched the visor and Greel's face popped on the screen. The lobby clock over his shoulder read 3:35. I moaned silently and flipped on vocal.

"Duncan here."

"Chief, get down here quick." I didn't ask why. Greel's my head bellhop and bellhops can smell hotel trouble.

"Where are you?"

"Level 12. Desk 19."

"Check. Hold everything, kid." I started to cut off, then I saw something else behind him. I took a deep breath and held it.

"Greel. Is that — Ollie?" Greel nodded. Like he was going to be sick. I was in my clothes and out the door. I took a manual emergency lift and fell seventy-eight floors in eighty seconds, not even thinking about my stomach. Not with Ollie to think about.

Ollie's uncle is Mike Sorrenson, owner of Hotel Intergalactica, and a reasonably decent person. Ollie is something else again. Crewcut, eager, bowtie and fresh out of college. My job — teach him "all there is to know about the hotel business." Which should be a real snap,

as he already knows all there is to know about everything.

Thursday, for instance. Ollie got his menus mixed and served scrambled eggs to five hundred visiting Vegans. That's all. No trouble. Except the difference between a Vegan and a chicken is strictly a matter of size and evolution — and we're still cleaning up Ballroom Nine.

I CAME out of the lift, my stomach only ten floors behind. Ollie popped out of his chair and came toward me, a sick smile pasted across his face.

"Mr. Duncan, I—"

"Sit down, Ollie, and shut up," I said quietly. He swallowed and sat down.

I turned to Greel.

"Okay," I said. "I'm ready. Let's have it."

"I'll save the details for later," said Greel. "We've got to get moving. Fast. I have reason to believe there are from four to fifty Skeidzti loose in the hotel."

I drew a blank at first. Then it hit me and I felt cold all over.

"Oh, my God," I said, sending a withering look at Ollie.

"Uh-huh." Greel nodded. "The way I get it from Ollie, four Stentorii checked in about 3:00. They wanted to go right up to their room so Ollie sent a boy with them and told the Stentorii he'd put their luggage in a lift right away."

"They kind of grinned at me, Mr. Duncan," Ollie interrupted, "and said that was fine, there was no hurry about the bags."

"Yeah, I'll bet they did," I said. I looked at Greel, and we both felt sick. "Don't tell me the rest. Ollie checked them in on the Master Register, turned to get their bags — and what-do-you-know, they were gone."

Ollie looked surprised. He started to ask how I could possibly know but I glared him back to his chair.

"Okay," I said. "What have you done so far?" Greel took a deep breath.

"First, they have about thirty to thirty-five minutes head start. I've shielded four levels above and below. I don't think they'll get that far, but no use taking chances. We've got one lucky break. Since the whole Quadrant borders on Free City they can't get out except through a Registration area."

"What about—"

Greel nodded. "Already done it. I've closed all five Desks in the Quadrant. Anyone wants to register has to come in by way of Seven."

"Fine. Just one thing—" I flipped through the register. "Could they have gotten outside through this door?"

"No. It was unshielded, all right. But there were no checkouts after the Stentorii registered."

OUR luck was holding. At least the Skeidzti were still just the hotel's problem. I've got a few friends on Free City's revolving council, but I don't like to mess with those boys unless I have to.

I sent Greel to organize the bellboys into search squads. Then I checked the Stentorii's room number and hauled Ollie out of his chair, figuring the only way to make sure he stayed out of trouble was to keep him with me. Before I left the lobby I picked up a pair of low-charge stunners and handed one to Ollie.

"Look," I said, "do you think you could possibly handle one of these things without knocking us both out cold?"

Ollie nodded vaguely. He took the weapon and held it as if he were certain it would go off in his hand.

"Sure, Mr. Duncan, but why do we need weapons? I mean, I'm sorry I let those things get loose, but—"

I stopped at the lift and stared at him. I suddenly realized the poor kid had no idea what he had done wrong. All he could see was that Greel and I were making a big fuss over a couple of alien housepets.

"Ollie," I said patiently, "do you really know what a Skeidzti is? I don't want an oration. Just tell me the simple truth. Do you or don't you?" He started to say something, then changed his mind and shook his head.

"I thought so. Well, first of all, don't refer to them as 'pets.' They may be cute as a kitten to a Stentorii, but as far as you're concerned they are dangerous, quick, carnivorous, highly adaptable little monsters. Only 'adaptable' is about as descriptive as calling the ocean moist. A Skeidzti in a kitchen will hide in a stack of plates and, by God, you'll eat off of him and swear he *is* a plate. A Skeidzti in a garden is a rock, a weed, a pile of leaves. In your bedroom he's a garter, a sock or a necktie. Only — put one around your neck and you'll damn well know he's not a necktie. Now do you think it might be permissible for me to continue to bear arms against the Skeidzti, just in case?"

Ollie was taken aback, I could tell. Almost enough to keep his mouth shut. He thought for maybe a full second before he said anything.

"But Mr. Duncan, if the Stentorii knew they were dangerous —" And that did it. I poked a hard finger in his chest and backed him against the wall.

"Look, Ollie," I said grimly, "that college line of logic is what got us into this jam in the first place. Now get this, and remember it. You don't need a degree in Alien Psychology to know that Rule One is *never* use your own viewpoint as a premise in guessing what an alien is thinking or doing. It just simply

doesn't work that way. An alien's actions are based upon what he thinks is reasonable and proper — not what you think he ought to think.

"Why do you think we have separate Quadrants and private entrances to each room? It sure as hell isn't for economy's sake, I can tell you that. It so happens that some of these so-called reasonable civilized beings still consider each other as rare culinary delights. While that sort of nonsense is SOP in Free City, this hotel is strictly out of bounds. And here's another rule you can put down in Duncan's lectures on Alien Psychology: If a guest phones down for a midnight snack, he may mean he wants the key to his neighbor's room." I took a deep breath.

"Am I getting through to you, Ollie?" Ollie nodded, wide-eyed, and I shoved him into the lift ahead of me. We hung for a moment, then the gravs caught hold.

IN my business you learn to get along with aliens, or at least put up with the ones you can't possibly get along with. And some are completely impossible — like the Nixies. Except for simple trade relations, I can't conceive of anything I might have in common with a Nixie.

And there was another rule of thumb for Ollie: Never be deceived by appearances. An alien's resemblance to human form is no indication that his outlook will in any way resemble human logic and reason. Until you know, don't guess; and don't assume, either, that a lack of human form denotes a lack of common interest. A Goron is a repulsive, warty glob of pink and brown protoplasm consisting of twelve eyes, nine pseudoarms—and an entirely human liking for jazz, poetry, Scotch and women. Or anyway, Goron females.

On the other hand, ignoring the general hairiness and the rodent-like features, a Stentorii looks as humanoid as I do. He is also a completely alien, cold-blooded, murderous creature without a shred of mercy in his body.

I stared hard at the Stentorii who opened the door. He stared back at me from tiny red eyes set wide on either side of his whiskery pink muzzle. Then he saw Ollie and gave a high squeaky laugh, baring a mouthful of sharp yellow teeth. He turned into his room and said something in Stentor to his companions. They nearly fell apart.

I had had just about enough. Time was running out. I switched on my portable recorder and said:

"According to Statute XII, Galactic Standard Code, I wish to invoke the privilege of communicating with you; without fear of future prosecution in case I may offend, by way of accidental implication, any tradition, custom or moral

standard of your race." The Stentorii just grinned. I spoke a little louder. "I said I speak without offense!"

The Stentorii frowned. He didn't like that at all. But he understood it.

"All right," he said grudgingly, "I accept."

"Fine," I said, and let him see that I had switched off my recorder. I never start an argument with an alien without invoking the non-offense clause. Of course, the same clause is stated in every Registration Contract, providing mutual protection for the hotel's guests and its employees. But I like to play it safe.

By now the three other Stentorii were up, grinning at Ollie. I ignored them and spoke to the one at the door.

"My name is Duncan," I told him. "I am manager of the hotel. This is my assistant, Mr. Sorrenson. I will come right to the point. You played a little joke down in the lobby a few minutes ago. Although this incident is a serious breach of your Registration Contract, I am willing to forget the matter if I am able to gain your full cooperation. On behalf of Hotel Intergalactica, I formally request you recall your Skeidzti immediately and turn them over to me for housing in the hotel kennel."

The Stentorii glanced at his companions, then turned to me with a look of mock astonishment.

"Mr. Duncan, do you imply the hotel has allowed my pets to become lost? Naturally, I will hold you responsible if they come to any harm while in your charge." I had half expected something like this. I couldn't do a thing but play it out.

"All right," I said, "I haven't time to appreciate your humor. You know it is illegal to bring unregistered alien pets into this hotel. I am also certain you are aware that we are in the Federation Circle, which is *not* in Free City territory — which means all guests, by the act of signing their Registration Contracts, place themselves under Federation law for the duration of their stay here."

THE Stentorii grinned, showing his yellow teeth.

"Mr. Duncan, you are bluffing. I am quite aware of the law, and respectfully submit that if you check your copy of our Registration Contracts you will find your employee here countersigned the Alien Responsibility Clause."

Well, that was his round. I was sure he was too oily a character to fall for it, but I had had to try. He was right. Under our Registration Contract it is presumed that while the hotel is responsible for a full knowledge of the Galactic Customs Restrictions, an alien cannot be expected to inform the Desk Clerk of all possible violations he may be

guilty of on any particular world. And any clerk green enough, or stupid enough, or both — like Ollie —who signs a Responsibility Clause without checking Galactic Customs — ought to have his head examined. Of course, we could take the Stentorii to court. Maybe we might even win, on the grounds of purposeful malice, but I don't like to get the hotel into law suits. It's bad publicity, and it gives other wise guys grand ideas.

The legal pitch having failed, I was ready to continue with Unveiled Threat No. 1.

"Look," I said wearily, "I admit you are within your legal rights. Although just how far within I'm not too certain at the moment. But before you come to any decision let me remind you that, while I may not be in a position to take official action against you, I fully intend to file a Warning Report to every member of the Galactic Hotel Association, which includes nearly twelve million first-class hotels and their subsidiaries. I don't know what your business is. But since you are here I presume it entails traveling. Traveling means hotels. If you refuse your cooperation, I assure you it may be quite difficult to find a decent room within twelve thousand parsecs of this planet."

The Stentorii shrugged and closed the door on my foot. I'm sure he would have hacked it off for a souvenir if I hadn't jerked it out.

I looked at Ollie. His fists were clenched by his side and there was a look of iron determination in his eyes.

"Well?" I said.

"Boy," said Ollie. "Just *wait* until they try to check into a GHA hotel again."

"Ollie," I said weakly, "I didn't come up here to actually accomplish anything with those characters. It is strictly a matter of form. A necessary routine for the record. Everything I said went completely down the drain. They were not impressed, frightened or embarrassed in any way. It is impossible to reason with a Stentorii because he is inherently incapable of taking anything you say seriously. He is also incapable of caring whether he gets a hotel room. Anywhere. Ever. He has one now, and the future is absolutely of no importance. He doesn't care about you, me, life, death or hotel rooms. Didn't you hear anything I said in the lift?"

"Sure, Mr. Duncan, but—"

"Ollie. Shut up."

I DITCHED Ollie and stopped off at my office for a wake-up pill. Greel had his command post set up in the Level 12 lobby and I joined him there. The lobby was full of squat Fensi bellhops, swarming in and out of the lifts like agitated ants.

Most of my bellhops and some of the Administrative staff are Fensi. I like to have them on the payroll, and I'd hire fifty more if I could get them. Fensi are quick, alert, reasonably honest and highly adaptable. Their adaptability alone makes them worth their weight in gold to a big hotel. A Fensi can breathe a wide variety of atmospheres, take plenty of G's, and doesn't care whether he's hot, cold or in-between. Unless you're a Fensi, room service around here can be a literally killing job.

Greel sprinted across the lobby, a wide smile stretching over his hairless blue face .

"I'm glad you're so happy," I said. "Maybe you should have gone to see our friends upstairs."

Greel laughed. "Maybe we won't need 'em, chief. The boys think we can clean the Skeidzti out by morning — with a little luck, of course."

"More than a little, if you ask me. Get any yet?"

Greel held up a finger. "One. Skorno picked up an ashtray on Ten and it nearly bit his hand off." He nodded toward the desk and Ollie and I followed. He picked up a small stationery box and pushed it toward me.

"Skorno got it before it could change completely — you can see what it was trying to do."

I could. The object in the box was a dead Skeidzti, but only one-quarter of it was in its natural form. The last thing it had touched was Skorno's hand. Following its blind-rule instinct it had imitated a hairless blue Fensi arm nearly up to the elbow, before it had either run out of material or died.

Now that it was dead it was slowly changing back to its natural form. The part we could see resembled a thin, eight-inch-wide worm-like creature with stubby serrated legs. I figured it could move about as fast a caterpillar without adapting. It was a highly vulnerable creature, and in order to survive it had developed a high degree of protective camouflage. With its soft body and slow speed almost anything could pick up a quick and easy meal. And its natural color didn't help at all. The dead quarter of the Skeidzti was a brilliant, almost phosphorescent orange.

"Well, son, get some idea what we're up against?" Ollie's eyes were glued to the box and his face was as blue as Greel's.

"Can they — can they adapt to *anything?*"

"No," said Greel, "they have limitations. I'm sure they can *imitate* most anything, but they couldn't change as quickly under six or eight G's, or, say, in a methane atmosphere."

"Not for two or three generations, anyway," I added soberly. Greel nodded.

"Anyway, Ollie, the point is these varmints are already used to a Stentor-Earth atmosphere. And if any get out—"

"It would be comparable," I added, "to a plague of invisible bobcats."

I THINK for the first time Ollie was hit with the seriousness of our problem. I could sense a kind of helpless panic in his eyes, as if he had suddenly realized he'd opened the floodgates and let the valve break off in his hand.

"Mr. Duncan, I — well, maybe we ought to get help. I mean — I'll take the blame — and — and —" He was shaking like a leaf. I eased him down to a chair.

"And just what sort of help did you have in mind?" I asked.

"Well, the police! Couldn't you—"

I shook my head firmly. "No. I certainly could not. That, my friend, is all we need. The Federation would quarantine the hotel, rout several thousand guests out of their various notions of sleep, and raise enough hell to wake every DeepDream addict from here to Andromeda."

"Aside from the fact," Greel added, "that every Skeidzti in the hotel could hitch a free ride out of here in some cop's pocket."

"Right. No, we can handle it ourselves, a hell of a lot quieter. We've had worse before." Ollie's face told me he thought I was an out and out liar. But then, like I said, this kid has a lot to learn about the hotel business.

The Skeidzti had been loose in the hotel since 3:00 a.m. By 5:30 we had killed eight of them. And eight Fensi bellhops had bandaged hands.

It was obvious we couldn't go around touching everything in the hotel to see if it was real or Skeidzti. Added was the problem of knowing *when* we had killed them all. The Skeidzti came in disguised as four pieces of Stentorii luggage, but we had no idea how many had clustered together to form each piece. And the Stentorii weren't telling.

I called Greel and Ollie to the Desk for a strategy meeting. Ollie dropped in a chair and sank into brooding silence. Even Greel's customary optimism seemed to have temporarily vanished. He reported the bellhops were doing their poking with sticks now, but the results were still alarmingly low.

"What we need," Greel complained, "is a system."

"Yeh, we need a system, all right," added Ollie helpfully. I stood up, paced around the Desk. The strategy meeting was dying on its feet.

"Look," I said, "let's analyze it. Our problem is to get rid of the Skeidzti, right?"

"Right," from Greel and Ollie.

"Okay. Now to kill them we have to see them. And by seeing them I mean we have to see them as they really are."



"Or catch them during a change," added Greel.

"Exactly." Somewhere in the back of my head an idea was catching hold. I kept talking, trying to push it out.

"Then our problem is this. We have to *force* them to change into something we can recognize as a definite Skeidzti." Greel's frown vanished. He sat up straight in his chair.

"You mean, like if we made them all change into an object we knew we only had one of."

"Sort of like that. Only that means we'd have to be able to isolate the Skeidzti in a specified area —and even if we could do that it'd be a hell of a problem to get rid of all the objects we didn't want them to imitate. Which means more stick poking. Remember, they can flatten out on the walls and ceiling just as easily as they can curl up like an ashtray or a sofa pillow." Greel's face dropped back into a disappointed frown.

"No, you've got the general idea," I said quickly. "But I think I've got a way to work the same thing, only quicker." Greel suddenly looked around, and I turned and saw Skorno, our first casualty, coming out of the lift. In his bandaged hand he held an ominous looking club, and in the other a limp and bloody throwrug. He stopped before us, grinning, and tossed the rug on the floor.

HE said, "Three more, chief."

I bent down for a closer look. This time, three Skeidzti had joined to imitate a portion of the rug. It was a near-perfect job. They had continued the intricate pattern, carrying out the design exactly where the real rug stopped. The only thing wrong, Skorno explained, was that he passed the rug fifty times a day and knew it was about twice as large as it should have been.

Something about Skorno's rug worried me. I asked him how long he thought it took for the Skeidzti to change from one form to another.

"About half a second," he said. "But I think it varies, depending on what they're imitating."

"For instance?"

"Well, on a plain surface, like a wall or something, they're faster—much faster."

"You mean," I asked, "if they have something more complicated to imitate, it takes longer?" Skorno shook his head.

"I wish it did. When I said it varies, I meant just the first few times. Once they've imitated something, they don't forget it."

"Well, hell," I snapped, "I know they can't imitate simultaneously! There has to be *some* definite minimum time lapse!" Skorno spread his hands helplessly.

"I know, chief. But whatever it is, it's too small to do us much good. They're just too fast for our reaction time. We still only get about one out of every ten we see." Swell, I thought. If they were too fast for the Fensi, we were really up the creek.

"What about spraying a low-charge disrupter all over the place and picking up the pieces?" said Greel hopefully.

Skorno said, "I forgot to mention that with a low-charge you have to hit them in just the right place or they're only knocked out for awhile."

"And while they're unconscious they're just as safe as ever," I finished for him. Then Skorno's words suddenly sank in. "Good Lord! Do you mean you're using *high*-charge disruptors—inside this hotel!"

Skorno nodded sheepishly. "What else can we do, chief? Sure, the place looks like a two-cluster cruiser plowed through. But we're getting 'em, slow but sure."

I was beginning to get a little bit mad. I thought about the Stentorii, sleeping peacefully in their rooms while we blasted four levels of valuable real estate looking for their damnable pets. And what, I asked myself, are we doing about it? Mooning around in the lobby on our respective rears, that's what we are doing. I stood up again, glaring at Ollie on general principles.

"All right," I said firmly. "This has gone far enough, gentlemen. I'm not saying there *is* any other way to finish off this mess, but I do have one humble idea that might save a little of Hotel Intergalactica's property. I figure as long as we're going to turn this place into a shooting gallery we might as well have something to shoot at."

I went over our floor plan with Greel and Skorno and picked out an area where the Skeidzti had proven particularly obnoxious. Then I sent Greel to seal off the other contaminated levels, and told Skorno to marshal his forces in Humanoid Hall. I picked Humanoid Hall for two reasons: One, plenty of Skeidzti to work on, and two, a minimum of furniture. For previously stated reasons I kept Ollie with me, and hopped a Class-A lift for Level Eight.

MORE than once I've had good reason to be thankful we enforce strong lift security measures. No matter where the Skeidzti might go, I was dead sure they would never reach guest quarters.

There's a good reason for this. We ordinarily house about thirty thousand guests in the hotel at any one time. That number represents five to fifteen thousand separate races, each one requiring its own unique set of conditions. In Quadrant Four I've got Denebian Iceworms at —200 F. right "next door" to a cluster of Calistan Feroids sleeping soundly in boiling mercury. No problem. We can handle

1,240 different atmospheres, with innumerable variations in density, temperature and lighting.

The real problem is sociological, not mechanical. If the Galaxy is old, the oldest thing in it are its grudges. To put it bluntly, some of these characters have hated each other's guts so long they forgot *why* about two million years ago.

Naturally, an Altaran isn't going to walk into a Vegan's room and strangle him. There's a problem of about 900 degrees and thirty G's to overcome first. But that's no real problem either — about 500,000 years ago they swarmed all over each other's planets in protective armor, and strangling was the nicest thing that happened.

And that's where we come in.

What they do outside Hotel Intergalactica is none of our business — but inside we make sure no one is faced with temptation. That's why our room segregation is vertical instead of horizontal. The hotel is built on the hive principle. Each cell or room has a private entrance bordering on the lift. There are no halls or corridors to wander around in, and any connecting rooms connect up and down. No exceptions.

It's a necessary rule and we enforce it. There are plenty of Common Rooms on the opposite side of the lifts for conferences and amiable gatherings—free of charge.

We work it that way for economical reasons, too. It's a lot easier to, say, keep a gravitic lift at 9G constant for a Cygnian than to change it to forty-five for a Lyri passenger. Everybody minds their own business — and nobody waits for an elevator.

That's where lift security comes in.

We run a high density force-shield over each lift entrance. Try to enter one that's not attuned to your requirements and you run smack into an invisible wall. Which is precisely what would happen if the Skeidzti tried it. Imitation is one thing. Fortunately, duplication is another.

It suddenly dawned on me that here was the real reason the Stentorii played their little joke on Ollie. They knew the Skeidzti couldn't get by the lift shields, so they didn't even try. A typical bit of Stentorii humor, I thought wryly. Don't dump your problems just anywhere — toss 'em where they can do some good.

I KNEW pretty well what to expect on Level Eight.

It was worse.

What did Skorno say? Like a two-cluster cruiser plowed through? It was more like a complete reinactment of the Battle of the Rim.

Through a low cloud of acrid blue smoke I made out the dim outlines of Fensi bellhops, lined up in military order across the room.

Skorno groped toward me through the wreckage. I put a handkerchief to my nose and stumbled out to meet him, Ollie choking along behind. The air was full of the smell of fused plastic, burnt carpeting and a particularly nauseous odor I identified as fried Skeidzti.

"Are you sure there's *anything* left alive up here?" I asked. Skorno nodded, breathing in the poisonous atmosphere like fresh country air.

"Sure, chief, they're here all right. You just can't see 'em." He nodded toward the ready Fensi crew. "We're all here, I think. What next?"

"Nothing," I choked, "until this smoke clears away. What happened to the air conditioning?"

"Greel's working on it. We had to block off some of the vents. Grid's not fine enough to keep out a Skeidzti." I looked up. The air was already beginning to clear. I gave it a few more minutes, then stepped up on a scorched sofa. I was anxious to get started so I cut it as short as possible. The idea, I explained, was to take advantage of the fact that there was a lapse, however small it might be, between the time a Skeidzti could change from one form to another. Catch them in that stage, and we had 'em. Simple as that, if it worked.

I lined the Fensi in a crude circle in the center of the room, facing outwards. Then I pulled some debris together for a shield, jerked Ollie down behind it and dimmed the lights. Dimmed them — not turned them off. The idea was to force the Skeidzti to adapt to new lighting conditions, and I was afraid if I turned them off altogether they'd sense they were safe in the absolute darkness and not adapt at all.

I gave them plenty of time, dimming the lights slowly until I could hardly tell they were on at all. Then I pressed the switch for maximum brightness and the room was flooded with brilliant light.

And there they were. They were fast, but not faster than the speed of light. For nearly a full second they stood out like ink spots on a clean white sheet, and we poured it on 'em. They were stunned perhaps a quarter-second past their normal reaction time. The Fensi are fast anyway, and that quarter-second margin was all they needed. We went through the routine three more times, then had to wait for the smoke to clear. We had killed thirty-seven Skeidzti.

Fine. But it gave me something to think about.

We had estimated there were at most fifty or sixty Skeidzti loose—and if we had killed thirty-seven on one level, in one room — how many did that mean were left? I mentioned it to Greel. He shrugged it off with typical Fensi optimism.

"What difference does it make, chief? We've got 'em on the run!"

"Sure," I said cautiously, "we've got 'em on the run *now*, all right." Both Greel and Skorno were grinning from ear to ear, having the time of their lives.

But I wasn't sure at all. Something kept asking me how long it would be before the Skeidzti caught on to the system — and whether we could come up fast enough with something to meet them. Before I left I gave explicit instructions to keep all isolation shields up — even after they were sure a room was clean. Greel gave a resigned shrug. I could tell they both thought the old man was taking the sport of Skeidzti hunting entirely too seriously.

Back in the lobby I sank into a chair and lit a cigarette. Ollie brought coffee, and we stared bleary-eyed at each other for half an hour. Ollie obviously didn't feel like talking and I was too damn tired to chew him out anymore. I could tell he was giving it to himself pretty hard anyway. That was probably doing more good than anything I could say.

POOR Ollie! If nothing else, one night of crisis at Hotel Intergalactica had rubbed off a considerable amount of shiny college exterior. His perfectly trimmed hair was caked with ceiling plaster. His neat bow tie dangled from his neck like last night's lettuce, and somehow he had managed to crack one side of his gold-rimmed glasses. He was beginning to look exactly like what he was supposed to be — a harried night clerk, who wished to hell he could remember why he had ever thought of going into the hotel business.

At 7:20 I located my army on the intercom. They had finished Eight, Nine and Ten, and were mopping up on Eleven. I told Greel to split his crew and send half up to Thirteen. We gulped the last of our coffee and headed down to Eleven.

I breathed a sigh of relief. Eleven wasn't nearly as bad as Eight. Either the Fensi had improved their marksmanship or the light trick was cutting out a lot of random shooting. Greel walked up, holstering his weapon.

"Well," I asked, "what do you think?"

"I think we just may survive the night," he said tiredly. "I'm going to try one more go-around here, then move up to Twelve."

"I have purposely been avoiding that thought," I said dryly, picturing the grinning Fensi horde blasting through my expensive lobby. "And of course," I added casually, "we haven't really *seen* any Skeidzti in the lobby, Greel. It may be that — ah —" Greel shot me a suspicious glance and I shut up. So who needs a lobby?

Greel reloaded his disruptor — a little too eagerly, I thought — and leaned against the wall.

"Actually," he said, "I don't picture it being too bad on Twelve."

"You don't, huh?" I said doubtfully.

"No, I mean it, chief. Funny thing, they were as thick as flies on Eight and Nine, but on Ten, and here on Eleven — they seem to be sort of thinning out." I raised an eyebrow at that.

"I don't suppose there could be a leaky shield, somewhere, or they might be catching on to that light trick."

"Oh, no," Greel insisted, "we're getting them all. They're just not as thick is all. I figure when they got loose on Twelve they all high-tailed it down to the lower floors for some reason, maybe to make—"

I grabbed Greel's arm and squeezed it hard. Something he had said suddenly sent a cold chill down my neck. Greel looked puzzled. I motioned him and Ollie to a quiet corner of the room, then turned to Greel.

"Did you send half your crew up to Thirteen?" I asked carefully.

Greel shrugged. "Sure, chief. You said—"

"Okay. Now think. I want to know exactly how many men you had here — *before* you split the crew." Greel thought.

"Forty-eight."

"Exactly forty-eight?"

"Exactly. I'm sure because it's the whole night shift for the Quadrant and everyone's on duty."

"Mr. Duncan," said Ollie, "what are you —"

I cut him off sharply. "Hold it, Ollie. Whatever it is can wait." I turned back to Greel. "Then if you split your crew, we should have twenty-four men in this room. Right?" Greel nodded. He started to speak, gave me a puzzled frown instead. He turned and carefully counted his crew.

"Oh, my God!" he said.

"I get thirty-six," I told him. "Ollie?" Ollie nodded, wide-eyed. I felt Greel stiffen beside me. I looked, and his hand was sliding toward his holster.

"Hold it," I said. "There's one way to make sure."

I checked on the intercom with Skorno on thirteen. Skorno counted twenty-four men. I nodded to Greel and Ollie.

I HAD wondered what the Skeidzti would come up with to counter our move. Now I knew. They had done the only thing they could do. They had imitated the most common thing in the room, the only thing that wasn't being blasted to shreds by the disruptors: the Fensi themselves.

I walked quickly to the center of the room.

"Attention, everyone," I yelled. "Line up against the wall, quick!" I watched them carefully, getting dizzy trying to spot the phonies.

"I'm going to tell you this once,"



I said. "Listen, and get it right!" I told them right off that twelve of them were fakes. They caught on fast, knowing better than anyone what the Skeidzti were capable of. I wasn't worried about warning the Skeidzti. Whatever they were, they were no more intelligent than a well-trained dog.

"There is going to be some shooting," I said. "Ignore it and do exactly as I say." I paused, and Ollie and Greel drew their weapons.

"All right, first man. When I say go, walk to the lift and drop to Ten. Go!" The first Fensi walked to the lift and disappeared.

"Second man, go!"

"Third man, go!" The third Fensi walked to the lift, exactly like the first two. Only that was as far as he could go.

Ollie, Greel and I burned him before he could change.

Then it happened. The Skeidzti sensed something wrong. Eleven fakes suddenly bolted for the lift. The real Fensi ignored my order and joined the shooting. I yelled but no one could hear me.

Suddenly the whole area about the lift erupted in blinding blue flame. I shielded my face and felt a sharp pain in my side as the floor came up to meet me.

Greel was on his feet first. I shook my head and limped over to him. There was a large jagged hole in the wall and I knew right away what it was, even before I saw the tangled mass of fused wire and metal. I picked up a hunk of carpet and tossed it down the lift. Then I went limp all over.

The carpet went down the lift as smooth as any living thing. The shields were down. The Skeidzti had the run of the whole Quadrant.

Greel was giving his crew a royal chewing out. I cut him off and ordered the Fensi to Level Twelve, on the double. It was too damn late for chewing out now. We were in real trouble. I looked around for Ollie. He was gone. I cursed myself and kicked a piece of furniture halfway across the room. That's all I needed — the Skeidzti and Ollie running loose.

"Greel! Check the inner shields, see if we've still got *anything* sealed off in this place!"

"I did. So far as I can tell it's just the lift."

"That's bad enough," I said grimly. "On this side of the lift they're open to anything one room deep. And on the other side, the first guest who steps out of his room will—" Greel shook his head violently. I brightened, suddenly remembering. We had already sealed the guest side and I knew the two sides were controlled separately. Unless something else happened, we still had them sealed into the lift with access restricted to the Common Rooms, kitchens and ballrooms. They were still within the Quadrant, and away from the guests.

"ALL right," I said as calmly as possible, "we start over. It means maybe eighty floors of isolation, and they won't fall for that light trick again. We'll have to escort every guest through the lift and arrange for alternate dining areas. And I want every Fensi tested through a shield that's working. I don't think they'll try that again, but—"

The intercom crackled and Skorno's voice came on high and frantic.

"Chief! Listen, that crazy kid has opened the shields! He broke into Central Control and let down every barrier in the Quadrant!"

"*What!* Why in — look, it may be too late but try to get the damn things up again. Quick!"

Skorno moaned. "I can't. He's fused the controls! I can't even *find* the cut-off switch!" I felt a sharp pain in my mouth and realized I was trying to bite my tongue off. If I ever got my hands on that kid—

"Listen, Skorno, find him! I don't care what you do to him, just find him!"

"I can't figure it," moaned Greel. "He must have gone completely off his rocker."

"He had better be off his rocker," I said grimly. "That's the only thing that's going to save him from me." The intercom sputtered again. Ollie. Somehow, I knew before he even spoke.

"Mr. Duncan, listen, I had to do it. I couldn't tell you because I knew you'd—"

"Listen, you little punk —" growled Greel. I frowned and shook my head.

"Ollie," I said gently, "this is Mr. Duncan. I understand. I'm not angry. Not at all. Now listen, Ollie. I know you're not feeling well. You're tired, Ollie. Tell us where you are and we'll come and get you — help you, I mean—"

"Listen," Ollie said angrily, "I'm not crazy. Now pay attention and do what I say — exactly!" I swallowed. He was gone, all right.

"Yes, Ollie. We're listening. Go ahead."

His voice relaxed. "I'm on Eighteen. The Crystal Ballroom." I swallowed again. My beautiful new ballroom.

"Come up through the loading entrance," Ollie went on. "You'll enter at Lift, ah — Forty-five, Humanoid Kitchen annex."

"Yes, Ollie. We'll do that."

"And Mr. Duncan—"

"Yes, Ollie?"

"This is not a threat, sir. But don't bring any weapons."

"Oh—" The intercom went dead. Ollie was through talking.

"Well?" said Greel.

"Well what?" I snapped. "Do *you* want to flush him out of there?"

Greel shrugged. "Lift Forty-five is this way, chief."

OLLIE let us into the kitchen. The smell nearly knocked us back into the lift.

"Gahhhh! What is it, Ollie!"

"Ghayschi stew," he said. "Pretty horrible, isn't it? Here. Wear these." He tossed me a box and I quickly jammed two of the Chef's Little Wonder Air Filters into my nose and passed the box to Greel. Ghayschi stew, I thought. The kid has really flipped.

"Ollie—" Then I stopped. He was evidently not kidding. His eyes were a little too bright and his face was wet and glistening. Also, he had a disruptor in his hand.

"It's on low charge," he said, "but I don't want to knock anybody out, Mr. Duncan. I got us into this mess and I've got to get us out — my own way." He paused. "Now," he said, "will you give me a hand with this pot?" I shot him a skeptical glance.

"Why? Where are we taking it?" Ollie tensed.

"Mr. Duncan," he pleaded, "you've got to trust me!"

"Trust you! You've wrecked my hotel, let those infernal pests loose, and you — you stand there with a gun in your hand and ask me to trust you? Move the damn pot yourself!" Ollie seemed to think a minute, then a hurt expression spread over his face.

"All right," he said calmly. "If I give you the gun, will you help me? You said yourself the hotel is wrecked. Why not give me a chance?"

I took a deep breath and let it out slowly.

"Okay, Ollie. Give me the gun." Ollie handed me the disruptor. Greel started to move and I motioned him back. Ollie was right. I really had absolutely nothing to lose.

I grabbed one end of the pot.

"This way," said Ollie, shoving open the door to the ballroom.

"Here?" Ollie nodded.

The Crystal Ballroom is new, and I'm proud of it. The floor is imported Denebian seaglass and the walls are Serinese protomurals. When the murals are on and the floor is lit, there isn't a hotel in the system that can touch it. I cringed as we set the large pot of Ghayschi stew square in the middle of the seaglass floor.

"Now what?" I asked.

"Now we get out of here. Quick." I followed him back to the kitchen. Behind him he trailed a long, thin wire. One end was attached to the top of the pot. Greel and I watched in silent wonder as he pulled the wire through the kitchen and into a tiny room off the kitchen pantry.

I knew where we were; it was the light control booth for the seaglass floor. I had shown it to Ollie several days before.

Ollie seated himself at the control board and began to play the lights. Through a small window I could see the ballroom, and the huge pot of Ghayschi stew. The floor began to glow, pulsing from gold to blue to green and back again. Ollie experimented a while, then seemed to be satisfied.

"Now," he said finally, without turning away from the controls, "we are ready." I raised an eyebrow at Greel. Both of us were wondering just exactly what we were ready for.

"Fortunately," said Ollie, "the ballroom itself doesn't border directly onto one of the unshielded lifts. The anteroom shield is still up, though. And now—" he pressed a button by his chair—"it's down." Greel and I exchanged another look.

"Next," said Ollie suddenly, "dinnertime."

I shut my eyes. Ollie jerked his wire. The pot tipped and the gray and brown viscous mess of Ghayschi stew spread slowly across the ballroom floor.

"Now what?" I asked cautiously.

"Now we wait. I've turned on the auxiliary blowers. The smell is spreading through the Skeidtzi occupied areas." I had a few choice comments on this move, but I kept them to myself. This was Ollie's party. I figured I could always strangle him later.

We waited ten minutes.

Then Ollie suddenly went into action. His hands swept over the light control board and the seaglass floor danced and pulsed with shifting colors, shifting faster and faster through the spectrum. I watched Ollie's face. His skin was tight and great beads of sweat poured from his forehead down his neck. Then the tense mask suddenly broke and a wide grin spread over his face.

"Look!" he yelled, nodding toward the floor.

I looked. At first there was nothing to see. Then I rubbed my eyes. The fast-changing lights must have affected my vision because the whole floor seemed alive with bright orange spots.

Then it hit me. *Skeidzti!* The floor around the stew was crowded three deep with them — and they were all changing back to their natural form!

We watched for an hour and a half. Finally Ollie jerked a lever and the colors faded away. He sank weakly back in his chair. I felt cold all over, and suddenly realized I was soaking wet. Later, we counted two hundred seventy-nine dead Skeidzti on the ballroom floor.

It was all over.

I HAD plenty of questions but I saved them until after breakfast. Some of it I could figure out, but I still didn't know how Ollie had been sure the Skeidzti would eat his infernal stew.

"Oh, I knew they'd like it," said Ollie. "Ghayschi stew is a favorite Stentorii dish. I looked it up. I figured the Skeidzti ate table scraps."

"That I can guess," I said. "But when they couldn't keep up with the changing lights why didn't they stop eating? Were they too stupid to know they either had to give up a meal or die?"

"No," said Ollie, "not stupid. They just couldn't help themselves. I figured any animal that could adapt so quickly and move around so fast was bound to have a pretty high metabolism. Any animal like that has to eat, oh, maybe six or eight times his weight in food every day or starve to death. They came into the hotel at 3:00. When I turned on the lights upstairs it was nearly ten o'clock. After seven hours they *had* to eat. There was nothing in the world that could have stopped them." Ollie paused, sipped his coffee.

"They finally adjusted to your light trick because they had no alternative stronger than survival. I used the same idea, but this time they had to make an impossible choice between two basic instincts."

"And they couldn't," I added. "So to avoid it they sort of, what—died of a nervous breakdown?"

"Something like that. In school there was this thing about some old experiments where a chicken or a rat was trained to certain responses, then the responses were mixed or taken away and —"

I yawned and got up to leave. "Sure, Ollie," I said. "Let's be sure and talk about it some time." I started for the door.

"Mr. Duncan—?"

"Yes?"

"Am I fired?"

I thought a minute. I was so tired I could hardly hear him.

"No, Ollie," I said wearily. "I don't think so. There's just one thing, though."

"Sir?"

"Keep," I said sternly, "the hell out of *my* kitchens!"

— NEAL BARRETT, JR.



A FALL OF GLASS

The weatherman was always right: Temperature, 59; humidity, 47%; occasional light showers — but of what?

By STANLEY R. LEE

Illustrated by DILLON

THE pockets of Mr. Humphrey Fownes were being picked outrageously.

It was a splendid day. The temperature was a crisp 59 degrees, the humidity a mildly dessicated 47%. The sun was a flaming orange ball in a cloudless blue sky.

His pockets were picked eleven times.

It should have been difficult. Under the circumstances it was a masterpiece of pocket picking. What made it possible was Humphrey Fownes' abstraction; he was an uncommonly preoccupied individual. He was strolling along a quiet residential avenue: small private houses, one after another, a place of little traffic and minimum distrac-

tions. But he was thinking about weather, which was an unusual subject to begin with for a person living in a domed city. He was thinking so deeply about it that it never occurred to him that entirely too many people were bumping into him. He was thinking about Optimum Dome Conditions (a crisp 59 degrees, a mildly dessicated 47%) when a bogus postman, who pretended to be reading a postal card, jostled him. In the confusion of spilled letters and apologies from both sides, the postman rifled Fownes's handkerchief and inside jacket pockets.

HE was still thinking about temperature and humidity when a pretty girl happened along with something in her eye. They collided. She got his right and left jacket pockets. It was much too much for coincidence. The sidewalk was wide enough to allow four people to pass at one time. He should surely have become suspicious when two men engaged in a heated argument came along. In the ensuing contretemps they emptied his rear pants pockets, got his wristwatch and restored the contents of the handkerchief pocket. It all went off very smoothly, like a game of put and take — the sole difference being that Humphrey Fownes had no idea he was playing.

There was an occasional tinkle of falling glass.

It fell on the streets and houses, making small geysers of shiny mist, hitting with a gentle musical sound, like the ephemeral droppings of a celesta. It was precipitation peculiar to a dome: feather-light fragments showering harmlessly on the city from time to time. Dome weevils, their metal arms reaching out with molten glass, roamed the huge casserole, ceaselessly patching and repairing.

Humphrey Fownes strode through the puffs of falling glass still intrigued by a temperature that was always 59 degrees, by a humidity that was always 47%, by weather that was always Optimum. It was this rather than skill that enabled the police to maintain such a tight surveillance on him, a surveillance that went to the extent of getting his fingerprints off the postman's bag, and which photographed, X-rayed and chemically analyzed the contents of his pockets before returning them. Two blocks away from his home a careless housewife spilled a five-pound bag of flour as he was passing. It was really plaster of Paris. He left his shoe prints, stride measurement, height, weight and handedness behind.

By the time Fownes reached his front door an entire dossier complete with photographs had been prepared and was being read by two men in an orange patrol car parked down the street.

LANFIERRE had undoubtedly been affected by his job.

Sitting behind the wheel of the orange car, he watched Humphrey Fownes approach with a distinct feeling of admiration, although it was an odd, objective kind of admiration, clinical in nature. It was similar to that of a pathologist observing for the first time a new and particularly virulent strain of pneumococcus under his microscope.

Lanfierre's job was to ferret out aberration. It couldn't be tolerated within the confines of a dome. Conformity had become more than a social force; it was a physical necessity. And, after years of working at it, Lanfierre had become an admirer of eccentricity. He came to see that genuine quirks were rare and, as time went on, due partly to his own small efforts, rarer.

Fownes was a masterpiece of queerness. He was utterly inexplicable. Lanfierre was almost proud of Humphrey Fownes.

"Sometimes his house *shakes*," Lanfierre said.

"House shakes," Lieutenant MacBride wrote in his notebook. Then he stopped and frowned. He reread what he'd just written.

"You heard right. The house *shakes*," Lanfierre said, savoring it.

MacBride looked at the Fownes house through the magnifying glass of the windshield. "Like from . . . *side to side?*" he asked in a somewhat patronizing tone of voice.

"And up and down."

MacBride returned the notebook to the breast pocket of his orange uniform. "Go on," he said, amused. "It sounds interesting." He tossed the dossier carelessly on the back seat.

Lanfierre sat stiffly behind the wheel, affronted. The cynical MacBride couldn't really appreciate fine aberrations. In some ways MacBride was a barbarian. Lanfierre had held out on Fownes for months. He had even contrived to engage him in conversation once, a pleasantly absurd, irrational little chat that titillated him for weeks. It was only with the greatest reluctance that he finally mentioned Fownes to MacBride. After years of searching for differences Lanfierre had seen how extraordinarily repetitious people were, echoes really, dimly resounding echoes, each believing itself whole and separate. They spoke in an incessant chatter of cliches, and their actions were unbelievably trite.

Then a fine robust freak came along and the others — the echoes — refused to believe it. The lieutenant was probably on the point of suggesting a vacation.

"Why don't you take a vacation?" Lieutenant MacBride suggested.

"It's like this, MacBride. Do you know what a wind is? A breeze? A zephyr?"

"I've heard some."

"They say there are mountaintops where winds blow all the time. Strong winds, MacBride. Winds like you and I can't imagine. And if there was a house sitting on such a mountain and if winds *did* blow, it would shake exactly the way that one does. Sometimes I get the feeling the whole place is going to slide off its foundation and go sailing down the avenue."

LIEUTENANT MacBride pursed his lips.

"I'll tell you something else," Lanfierre went on. "The *windows* all close at the same time. You'll be watching and all of a sudden every single window in the place will drop to its sill." Lanfierre leaned back in the seat, his eyes still on the house. "Sometimes I think there's a whole crowd of people in there waiting for a signal — as if they all had something important to say but had to close the windows first so no one could hear. Why else close the windows in a domed city? And then as soon as the place is buttoned up they all explode into conversation—and that's why the house shakes."

MacBride whistled.

"No, I don't need a vacation."

A falling piece of glass dissolved into a puff of gossamer against the windshield. Lanfierre started and bumped his knee on the steering wheel.

"No, you don't need a rest," MacBride said. "You're starting to see flying houses, hear loud babbling voices. You've got winds in your brain, Lanfierre, breezes of fatigue, zephyrs of irrationality—"

At that moment, all at once, every last window in the house slammed shut.

The street was deserted and quiet, not a movement, not a sound. MacBride and Lanfierre both leaned forward, as if waiting for the ghostly babble of voices to commence.

The house began to shake.

It rocked from side to side, it pitched forward and back, it yawed and dipped and twisted, straining at the mooring of its foundation. The house could have been preparing to take off and sail down the...

MacBride looked at Lanfierre and Lanfierre looked at MacBride and then they both looked back at the dancing house.

"And the *water*," Lanfierre said. "The *water* he uses! He could be the thirstiest and cleanest man in the city. He could have a whole family of thirsty and clean kids, and he *still* wouldn't need all that water."

The lieutenant had picked up the dossier. He thumbed through the pages now in amazement. "Where do you get a guy like this?" he asked. "Did you see what he carries in his pockets?"

"And compasses won't work on this street."



The lieutenant lit a cigarette and sighed.

He usually sighed when making the decision to raid a dwelling. It expressed his weariness and distaste for people who went off and got neurotic when they could be enjoying a happy, normal existence. There was something implacable about his sighs.

"He'll be coming out soon," Lanfierre said. "He eats supper next door with a widow. Then he goes to the library. Always the same. Supper at the widow's next door and then the library."

MacBride's eyebrows went up a fraction of an inch. "The library?" he said. "Is he in with that bunch?"

Lanfierre nodded.

"Should be very interesting," MacBride said slowly.

"I can't wait to see what he's got in there," Lanfierre murmured, watching the house with a consuming interest.

They sat there smoking in silence and every now and then their eyes widened as the house danced a new step.

FOWNES stopped on the porch to brush the plaster of paris off his shoes. He hadn't seen the patrol car and this intense preoccupation of his was also responsible for the dancing house—he simply hadn't noticed. There was a certain amount of vibration, of course. He had a bootleg pipe connected into the dome blower system, and the high-pressure air caused some buffeting against the thin walls of the house. At least, he called it buffeting; he'd never thought to watch from outside.

He went in and threw his jacket on the sofa, there being no room left in the closets. Crossing the living room he stopped to twist a draw-pull.

Every window slammed shut.

"Tight as a kite," he thought, satisfied. He continued on toward the closet at the foot of the stairs and then stopped again. Was that right? No, *snug as a hug in a rug.* He went on, thinking: *The old devils.*

The downstairs closet was like a great watch case, a profusion of wheels surrounding the Master Mechanism, which was a miniature see-saw that went back and forth 365¼ times an hour. The wheels had a curious stateliness about them. They were all quite old, salvaged from grandfather's clocks and music boxes and they went around in graceful circles at the rate of 30 and 31 times an hour . . . although there was one slightly eccentric cam that vacillated between 28 and 29. He watched as they spun and flashed in the darkness, and then set them for seven o'clock in the evening, April seventh, any year.

Outside, the domed city vanished.

It was replaced by an illusion. Or, as Fownes hoped it might appear, the illusion of the domed city vanished and was replaced by a more satisfactory, and, for his specific purpose, more functional, illusion. Looking through the window he saw only a garden.

Instead of an orange sun at perpetual high noon, there was a red sun setting brilliantly, marred only by an occasional arcover which left the smell of ozone in the air. There was also a gigantic moon. It hid a huge area of sky, and it sang. The sun and moon both looked down upon a garden that was itself scintillant, composed largely of neon roses.

Moonlight, he thought, and roses. Satisfactory. *And cocktails for two.* Blast, he'd never be able to figure that one out! He watched as the moon played, *Oh, You Beautiful Doll* and the neon roses flashed slowly from red to violet, then went back to the closet and turned on the scent. The house began to smell like an immensely concentrated rose as the moon shifted to *People Will Say We're In Love.*

HE rubbed his chin critically. It *seemed* all right. A dreamy sunset, an enchanted moon, flowers, scent.

They were all purely speculative of course. He had no idea how a rose really smelled — or looked for that matter. Not to mention a moon. But then, neither did the widow. He'd have to be confident, assertive. *Insist* on it. I tell you, my dear, this is a genuine realistic romantic moon. Now, does it do anything to your pulse? Do you feel icy fingers marching up and down your spine?

His own spine didn't seem to be affected. But then he hadn't read that book on ancient mores and courtship customs.

How really odd the ancients were. Seduction seemed to be an incredibly long and drawn-out process, accompanied by a considerable amount of falsification. Communication seemed virtually impossible. "No" meant any number of things, depending on the tone of voice and the circumstances. It could mean yes, it could mean ask me again later on this evening.

He went up the stairs to the bedroom closet and tried the rainmaker, thinking roguishly: *Thou shalt not inundate.* The risks he was taking! A shower fell gently on the garden and a male chorus began to chant *Singing in the Rain.* Undiminished, the yellow moon and the red sun continued to be brilliant, although the sun occasionally arced over and demolished several of the neon roses.

The last wheel in the bedroom closet was a rather elegant steering wheel from an old 1995 Studebaker. This was on the bootleg pipe; he gingerly turned it.

Far below in the cellar there was a rumble and then the soft whistle of winds came to him.

He went downstairs to watch out the living room window. This was important; the window had a really fixed attitude about air currents. The neon roses bent and tinkled against each other as the wind rose and the moon shook a trifle as it whispered *Cuddle Up a Little Closer.*

He watched with folded arms, considering how he would start. *My dear Mrs. Deshazaway.* Too formal. They'd be looking out at the romantic garden; time to be a bit forward. *My very dear Mrs. Deshazaway.* No. Contrived. How about a simple, *Dear Mrs. Deshazaway.* That might be it. *I was wondering, seeing as how it's so late, if you wouldn't rather stay over instead of going home . . .*

Preoccupied, he hadn't noticed the winds building up, didn't hear the shaking and rattling of the pipes. There were attic pipes connected to wall pipes and wall pipes connected to cellar pipes, and they made one gigantic skeleton that began to rattle its bones and dance as high-pressure air from the dome blower rushed in, slowly opening the Studebaker valve wider and wider . . .

The neon roses thrashed about, extinguishing each other. The red sun shot off a mass of sparks and then quickly sank out of sight. The moon fell on the garden and rolled ponderously along, crooning *When the Blue of the Night Meets the Gold of the Day.*

The shaking house finally woke him up. He scrambled upstairs to the Studebaker wheel and shut it off.

At the window again, he sighed. Repairs were in order. And it wasn't the first time the winds got out of line.

Why didn't she marry him and save all this bother? He shut it all down and went out the front door, wondering about the rhyme of the months, about stately August and eccentric February and romantic April. April. Its days were thirty and it followed September. *And all the rest have thirty-one.* What a strange people, the ancients!

He still didn't see the orange car parked down the street.

"MEN are too perishable," Mrs. Deshazaway said over dinner. "For all practical purposes I'm never going to marry again. All my husbands die."

"Would you pass the beets, please?" Humphrey Fownes said.

She handed him a platter of steaming red beets. "And don't look at me that way," she said. "I'm *not* going to marry you and if you want reasons I'll give you four of them. Andrew. Curt. Norman. And Alphonse."

The widow was a passionate woman. She did everything passionately — talking, cooking, dressing. Her beets were passionately red. Her clothes rustled and her high heels clicked and her jewelry tinkled. She was possessed by an uncontrollable dynamism. Fownes had never known anyone like her. "You forgot to put salt on the potatoes," she said passionately, then went on as calmly as it was possible for her to be, to explain why she couldn't marry him. "Do you have any idea what people are saying? They're all saying I'm a cannibal! I rob my husbands of their life force and when they're empty I carry their bodies outside on my way to the justice of the peace."

"As long as there are people," he said philosophically, "there'll be talk."

"But it's the air! Why don't they talk about that? The air is stale, I'm positive. It's not nourishing. The air is stale and Andrew, Curt, Norman and Alphonse couldn't stand it. Poor Alphonse. He was never so healthy as on the day he was born. From then on things got steadily worse for him."

"I don't seem to mind the air."

She threw up her hands. "You'd be the worst of the lot!" She left the table, rustling and tinkling about the room. "I can just hear them. Try some of the asparagus. *Five.* That's what they'd say. That woman did it again. And the plain fact is I don't want you on my record.

"Really," Fownes protested. "I feel splendid. Never better."

He could hear her moving about and then felt her hands on his shoulders. "And what about those *very* elaborate plans you've been making to seduce me?"

Fownes froze with three asparagus hanging from his fork.

"Don't you think *they'll* find out? *I* found out and you can bet *they* will. It's my fault, I guess. I talk too much. And I don't always tell the truth. To be completely honest with you, Mr. Fownes, it wasn't the old customs at all standing between us, it was air. I can't have another man die on me, it's bad for my self-esteem. And now you've gone and done something good and criminal, something peculiar."

FOWNES put his fork down. "Dear Mrs. Deshazaway," he started to say.

"And of course when they do find out and they ask you why, Mr. Fownes, you'll tell them. No, no heroics, please! When they ask a man a question he always answers and you will too. You'll tell them I wanted to be courted and when they hear that they'll be around to ask *me* a few questions. You see, we're both a bit queer."

"I hadn't thought of that," Fownes said quietly.

"Oh, it doesn't really matter. I'll join Andrew, Curt, Norman —"

"That won't be necessary,"

Fownes said with unusual force. "With all due respect to Andrew, Curt, Norman and Alphonse, I might as well state here and now I have other plans for you, Mrs. Deshazaway."

"But my dear Mr. Fownes," she said, leaning across the table. "We're lost, you and I."

"Not if we could leave the dome," Fownes said quietly.

"That's impossible! How?"

In no hurry, now that he had the widow's complete attention, Fownes leaned across the table and whispered: "Fresh air, Mrs. Deshazaway? Space? Miles and miles of space where the real-estate monopoly has no control whatever? Where the *wind* blows across *prairies;* or is it the other way around? No matter. How would you like *that,* Mrs. Deshazaway?"

Breathing somewhat faster than usual, the widow rested her chin on her two hands. "Pray continue," she said.

"Endless vistas of moonlight and roses? April showers, Mrs. Deshazaway. And June, which as you may know follows directly upon April and is supposed to be the month of brides, of marrying. June also lies beyond the dome."

"I see."

"*And,*" Mr. Fownes added, his voice a honeyed whisper, "they say that somewhere out in the space and the roses and the moonlight, the sleeping equinox yawns and rises because on a certain day it's *vernal* and that's when it roams the Open Country where geigers no longer scintillate."

"*My.*" Mrs. Deshazaway rose, paced slowly to the window and then came back to the table, standing directly over Fownes. "If you can get us outside the dome," she said, "out where a man stays *warm* long enough for his wife to get to know him . . . if you can do that, Mr. Fownes . . . you may call me Agnes."

WHEN Humphrey Fownes stepped out of the widow's house, there was a look of such intense abstraction on his features that Lanfierre felt a wistful desire to get out of the car and walk along with the man. It would be such a *deliciously* insane experience. ("April has thirty days," Fownes mumbled, passing them, "because thirty is the largest number such that all smaller numbers not having a common divisor with it are *primes.*" MacBride frowned and added it to the dossier. Lanfierre sighed.)

Pinning his hopes on the Movement, Fownes went straight to the library several blocks away, a shattered depressing place given over to government publications and censored old books with holes in them. It was used so infrequently that the Movement was able to meet there undisturbed. The librarian was a yellowed, dog-eared woman of eighty. She spent her days reading ancient library cards and, like the books around her, had been rendered by time's own censor into near unintelligibility.

"Here's one," she said to him as he entered. *"Gulliver's Travels.* Loaned to John Wesley Davidson on March 14, 1979 for *five* days. What do you make of it?"

In the litter of books and cards and dried out ink pads that surrounded the librarian, Fownes noticed a torn dust jacket with a curious illustration. "What's that?" he said.

"A twister," she replied quickly. "Now listen to *this.* Seven years later on March 21, 1986, Ella Marshall Davidson took out the same book. What do you make of *that?*"

"I'd say," Humphrey Fownes said, "that he . . . that he recommended it to her, that one day they met in the street and he told her about this book and then they . . . they went to the library together and she borrowed it and eventually, why eventually they got married."

"Hah! They were brother and sister!" the librarian shouted in her parched voice, her old buckram eyes laughing with cunning.

Fownes smiled weakly and looked again at the dust jacket. The twister was unquestionably a meteorological phenomenon. It spun ominously, like a malevolent top, and coursed the countryside destructively, carrying a Dorothy to an Oz. He couldn't help wondering if twisters did anything to feminine pulses, if they could possibly be a part of a moonlit night, with cocktails and roses. He absently stuffed the dust jacket in his pocket and went on into the other rooms, the librarian mumbling after him: "Edna Murdoch Featherstone, April 21, 1991," as though reading inscriptions on a tombstone.

THE Movement met in what had been the children's room, where unpaid ladies of the afternoon had once upon a time read stories to other people's offspring. The members sat around at the miniature tables looking oddly like giants fled from their fairy tales, protesting.

"Where did the old society fail?" the leader was demanding of them. He stood in the center of the room, leaning on a heavy knobbed cane. He glanced around at the group almost complacently, and waited as Humphrey Fownes squeezed into an empty chair. "We live in a dome," the leader said, "for lack of something. An invention! What is the one thing that the great technological societies before ours could not invent, notwithstanding their various giant brains, electronic and otherwise?"

Fownes was the kind of man who never answered a rhetorical question. He waited, uncomfortable in

the tight chair, while the others struggled with this problem in revolutionary dialectics.

"*A sound foreign policy,*" the leader said, aware that no one else had obtained the insight. "If a sound foreign policy can't be created the only alternative is not to have any foreign policy at all. Thus the movement into domes began — *by common consent of the governments.* This is known as self-containment."

Dialectically out in left field, Humphrey Fownes waited for a lull in the ensuing discussion and then politely inquired how it might be arranged for him to get out.

"Out?" the leader said, frowning. "Out? Out where?"

"Outside the dome."

"Oh. All in good time, my friend. One day we shall all pick up and leave."

"And that day I'll await impatiently," Fownes replied with marvelous tact, "because it will be lonely out there for the two of us. My future wife and I have to leave *now.*"

"Nonsense. Ridiculous! You have to be prepared for the Open Country. You can't just up and leave, it would be suicide, Fownes. And dialectically very poor."

"Then you *have* discussed preparations, the practical necessities of life in the Open Country. Food, clothing, a weapon perhaps? What else? Have I left anything out?"

The leader sighed. "The gentleman wants to know if he's left anything out," he said to the group.

Fownes looked around at them, at some dozen pained expressions.

"Tell the man what he's forgotten," the leader said, walking to the far window and turning his back quite pointedly on them.

Everyone spoke at the same moment. "*A sound foreign policy,*" they all said, it being almost too obvious for words.

ON his way out the librarian shouted at him: "*A Tale of a Tub,* thirty-five years overdue!" She was calculating the fine as he closed the door.

Humphrey Fownes' preoccupation finally came to an end when he was one block away from his house. It was then that he realized something unusual must have occurred. An orange patrol car of the security police was parked at his front door. And something else was happening too.

His house was dancing.

It was disconcerting, and at the same time enchanting, to watch one's residence frisking about on its foundation. It was such a strange sight that for the moment he didn't give a thought to what might be causing it. But when he stepped gingerly onto the porch, which was doing its own independent gavotte, he reached for the doorknob with an immense curiosity.

The door flung itself open and knocked him back off the porch.

From a prone position on his miniscule front lawn, Fownes watched as his favorite easy chair sailed out of the living room on a blast of cold air and went pinwheeling down the avenue in the bright sunshine. A wild wind and a thick fog poured out of the house. It brought chairs, suits, small tables, lamps trailing their cords, ashtrays, sofa cushions. The house was emptying itself fiercely, as if disgorging an old, spoiled meal. From deep inside he could hear the rumble of his ancient upright piano as it rolled ponderously from room to room.

He stood up; a wet wind swept over him, whipping at his face, toying with his hair. It was a whistling in his ears, and a tingle on his cheeks. He got hit by a shoe.

As he forced his way back to the doorway needles of rain played over his face and he heard a voice cry out from somewhere in the living room.

"Help!" Lieutenant MacBride called.

Standing in the doorway with his wet hair plastered down on his dripping scalp, the wind roaring about him, the piano rumbling in the distance like thunder, Humphrey Fownes suddenly saw it all very clearly.

"*Winds,*" he said in a whisper.

"What's happening?" MacBride yelled, crouching behind the sofa.

"*March* winds," he said.

"What?!"

"April showers!"

The winds roared for a moment and then MacBride's lost voice emerged from the blackness of the living room. "These are *not* Optimum Dome Conditions!" the voice wailed. "The temperature is *not* 59 degrees. The humidity is *not* 47%!"

FOWNES held his face up to let the rain fall on it. "Moonlight!" he shouted. "Roses! My *soul* for a cocktail for two!" He grasped the doorway to keep from being blown out of the house.

"Are you going to make it stop or aren't you!" MacBride yelled.

"You'll have to tell me what you did first!"

"I *told* him not to touch that wheel! Lanfierre. He's in the upstairs bedroom!"

When he heard this Fownes plunged into the house and fought his way up the stairs. He found Lanfierre standing outside the bedroom with a wheel in his hand.

"What have I done?" Lanfierre asked in the monotone of shock.

Fownes took the wheel. It was off a 1995 Studebaker.

"I'm not sure what's going to come of this," he said to Lanfierre with an astonishing amount of objectivity, "but the entire dome air supply is now coming through my bedroom."

The wind screamed.

"Is there something I can turn?" Lanfierre asked.

"Not any more there isn't."

They started down the stairs carefully, but the wind caught them and they quickly reached the bottom in a wet heap.

Recruiting Lieutenant MacBride from behind his sofa, the men carefully edged out of the house and forced the front door shut.

The wind died. The fog dispersed. They stood dripping in the Optimum Dome Conditions of the bright avenue.

"I never figured on *this*," Lanfierre said, shaking his head

With the front door closed the wind quickly built up inside the house. They could see the furnishing whirl past the windows. The house did a wild, elated jig.

"What kind of a place *is* this?" MacBride said, his courage beginning to return. He took out his notebook but it was a soggy mess. He tossed it away.

"Sure, he was *different*," Lanfierre murmured. "I knew that much."

When the roof blew off they weren't really surprised. With a certain amount of equanimity they watched it lift off almost gracefully, standing on end for a moment before toppling to the ground. It was strangely slow motion, as was the black twirling cloud that now rose out of the master bedroom, spewing shorts and socks and pillow cases every which way.

"*Now* what?" MacBride said, thoroughly exasperated, as this strange black cloud began to accelerate, whirling about like some malevolent top . . .

HUMPHREY Fownes took out the dust jacket he'd found in the library. He held it up and carefully compared the spinning cloud in his bedroom with the illustration. The cloud rose and spun, assuming the identical shape of the illustration.

"It's a twister," he said softly. "A Kansas twister!"

"What," MacBride asked, his bravado slipping away again, "what . . . is a twister?"

The twister roared and moved out of the bedroom, out over the rear of the house toward the side of the dome. "It says here," Fownes shouted over the roaring, "that Dorothy traveled from Kansas to Oz in a twister and that . . . and that Oz is a wonderful and mysterious land *beyond the confines of everyday living.*"

MacBride's eyes and mouth were great zeros.

"Is there something I can turn?" Lanfierre asked.

Huge chunks of glass began to fall around them.

"Fownes!" MacBride shouted. "This is a direct order! Make it go back!"

But Fownes had already begun to run on toward the next house, dodging mountainous puffs of glass as he went. "Mrs. Deshazaway!" he shouted. "Yoo-hoo, Mrs. Deshazaway!"

The dome weevils were going berserk trying to keep up with the precipitation. They whirred back and forth at frightful speed, then, emptied of molten glass, rushed to the Trough which they quickly emptied and then rushed about empty-handed. "Yoo-hoo!" he yelled, running. The artificial sun vanished behind the mushrooming twister. Optimum temperature collapsed. "Mrs. Deshazaway! *Agnes*, will you marry me? Yoo-hoo!"

Lanfierre and Lieutenant MacBride leaned against their car and waited, dazed.

There was quite a large fall of glass.

— STANLEY R. LEE

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RUSSIA is graduating scientists and engineers by the hundreds of thousands yearly — and the production of science fiction has class-A priority with her fiction factories. These are two of the reasons for this month's king-size Junior Education Corner.

THE MOON by George Gamow. Abelard-Schuman, N. Y., $2.75

IN THE belief that it is a sure bet that the Moon will be the first extraterrestrial body to be visited by man, Dr. Gamow's book leads off the astronomical section. It is a clear exposition of fact and theory about our satellite: its origin, composition, effects upon the Earth, etc.

This revision of his 1953 book still retains the amusingly archaic excerpts from Verne's classic *From the Earth to the Moon* in a chapter headed "Moon Projectile — a Dream." Not to end on this note, however, it is followed immediately by "Moon Rocket — a Reality" — which it is indeed.

MEN, PLANETS AND STARS by Clyde B. Clason. G. P. Putnam's Sons, N. Y., $2.95

ALTHOUGH CLASON'S book is a solid technical work designed for junior and high school level, his style is far from pedantic.

"Planetoid Icarus is named after a legendary Greek boy who flew too close to the sun with his wax wings. 'Look, Pa. No hands!' "

Despite, or perhaps because of, this semi-humorous approach, Clason establishes a rapport with his youthful audience that makes his space medicine easy to take.

ROCKETS INTO SPACE by Alexander L. Crosby and Nancy Larrick. Random House, N. Y., $1.95

THE EASY-to-read series features simple sentences built from easy words. However, though written for the eight-to-ten-year-old, the plentiful and technically excellent illustrations appeal also to a maturer audience. In fact, the information apparent in the illustrations frequently is not treated in the text, so that even adults can look and learn from this rocket primer.

DISCOVERING THE HEAVENS by I. O. Evans. Roy Publishers, N. Y., $3.50

THIS STUDY of astronomical history is written in a facile style that is exceptionally easy to take to mind. Evans skillfully weaves interesting vignettes of the founders of astronomy into his book and chronicles its laborious growth from superstition to its present eminence among the sciences.

THE ROMANCE OF CHEMISTRY by Keith Gordon Irwin. Viking Press, N. Y., $3.75

EARLY MAN rose from savagery by applying basic physical and chemical laws, but his understanding of these sciences differed greatly. Chemistry, the interlocking of particles impossibly small to see, had to wait for theory to catch up with practice, whereas physical phenomena were self-evident.

Irwin's book, entertainingly informative, highlights epochal moments of discovery that helped lift chemistry to today's level of achievement.

DISCOVERING CHEMISTRY by Elizabeth K. Cooper. Harcourt, Brace & Co., N. Y., $3.00

MRS. COOPER'S book is a splendid follow-up, to *Romance*, which whets the intellectual appetite. She provides plenty of experimental material for the neophyte, a concise work program

and a proper respect for a "serious form of fun."

LOUIS PASTEUR by Madeleine P. Grant. Whittlesey, N. Y., $3.25
GREGOR MENDEL by Harry Sootin. Vanguard Press, N. Y., $3.00
ALBERT EINSTEIN by A. Beckhard. G. P. Putnam's Sons, N. Y., $2.50

PASTEUR AND Mendel both came from poor families who sacrificed enormously to give them schooling. Their battle for education was equally against hunger and privation. Moreover, Mendel's only hope for a livelihood lay in joining the priesthood.

His fame rests on the results of an eight-year experiment with garden peas. Mendel, applying numerical method and rigid control, discovered the mathematics of genetics. Unfortunately, he died unrecognized, his work requiring rediscovery.

Pasteur, however, lived to receive the highest honors. His process of sterilization saved breweries as well as creameries from ruin. Possessing enormous powers of concentration, he plunged into work that saved the French silk industry, and he did it despite the deaths of three of his children. His most valuable contribution, though, remains the germ theory of infection.

Both books are inspirational and well integrated.

Not so with *Einstein.* Working in a restrictive 128-page frame, Beckhard has cut and snipped Einstein's life into a silhouette. This is a pity, he was decidedly not only "$E = MC^2$."

SCIENCE AND THE DOCTOR by F. R. Elwell and Dr. J. M. Richardson. Criterion Books, N. Y., $3.50

MEDICINE LEFT the realm of magic when its practitioners began to tie together cause and effect. Unfortunately, medical practice lost two thousand years to mumbo-jumbo, even though Hippocrates, the ancient Greek, set standards for observation and diagnosis.

This book of thrilling discoveries should channelize the social urge of any young do-gooder.

WINDOW IN THE SKY by Homer E. Newell, Jr. McGraw-Hill Book Co., Inc., N. Y., $2.75

AS NOTED here previously, Dr. Newell equals his books in interest — he is Associate Director in charge of Space Science for NASA, U.S. National Aeronautics and Space Administration. His book brims equally with authority.

The upper atmosphere is his special province and here he presents knowledge that was completely unsuspected until rocket soundings became feasible these last several years.

THE CLOCK WE LIVE ON by Isaac Asimov. Abelard-Schuman, N. Y., $3.00

DOCTOR ASIMOV again picks a fascinating theme — Time. He travels this dimension from mankind's ancient Moon and Sun timepieces to the present accurate atomic clocks that, by comparison, make the heavens so reliable that the costliest timepieces are as a Mickey Mouse watch.

THE STORY OF EARTH SCIENCE by Horace G. Richards. J. B. Lippincott Co., Phila., $3.75

FOSSILS, ROCKS and minerals, in that order, attract the interest of laymen or prospective students of Earth science, Richards avers, and his book is planned accordingly. It abounds with information for the neophyte archeologist — from tips on sites for excavation and research to specific information on identification of the aforementioned three categories.

MEN AND WOMEN BEHIND THE ATOM by Sarah U. Riedman. Abelard-Schuman, N. Y., $3.00

MANKIND'S ENTRY into the Atomic Age was assisted by numerous midwives. An enormous amount of information has been distilled into laudably compact, digestible form; no small feat when dealing with the contributions of such as the Curies, Einstein, Rutherford and — contemporary giants.

BLASTOFF AT 0300 by Hugh Walters. Criterion Books, N. Y., $3.50

A QUEER alteration in the outline of the Moon mountain, Pico, causes Britain to hurry its space program in the fear that Russia may already have a base there. A young Cambridge student, short enough to fit a hastily redesigned research rocket, is selected for a preliminary hundred-mile photo-survey jump into space.

The book, a vivid fictional account of the training program necessary for such a venture, includes plenty of action and international intrigue. Plausible and detailed, it is a juvenile *Prelude to Space.*

(For Youngsters)
Rating: *****

STARSHIP TROOPERS by

Robert A. Heinlein. G. P. Putnam's Sons, N. Y. $3.95

IN "TROOPERS," Heinlein has penned a juvenile that *really* is not. This is a new and bitter and disillusioned Heinlein.

His story opens with flaming action and then acquaints the reader, via flashbacks, with his hero, set on acquiring a citizen's franchise and voting rights by serving in the armed forces.

From boot camp into combat, from OCS to command, Heinlein's story is well told, crammed with political theory, and of exceptional interest to veterans with battle experience . . . but youngsters will find it melancholy and verbose. Thus my split rating.

Rating for children: **½
Rating for adults ****½
Rating for civilians: ?

STORM OVER WARLOCK by Andre Norton. World Publishing Co., Cleveland, $3.00

YOUNG, UNEDUCATED Shann Lantee, from the slums of planet Tyr, is one of two human survivors of a Terran survey team on Warlock. Insect-derived Throg beetle-men, with whom Earth has fought to stalemate for years, have wiped out the advance outpost on Warlock, preparatory to interdicting the coming colonist transport.

Miss Norton has again written in an endearing animal team, this time Taggi and Togi, Terran wolverines, to assist Lantee in his vendetta against the Throgs. Her skill in making the incredible believable was never better demonstrated than in this imaginative and adventuresome yarn.

Rating: ****

THE SECRET OF THE NINTH PLANET by Donald Wollheim. The John C. Winston Co., Phila., $2.50

A HUGE, uninhabited alien installation, high in the Andes, is robbing Earth of solar energy. When discovered and smashed by an archeological expedition, other solar traps are planted on each planet. To destroy them, America's first anti-gravity ship is pressed into an odyssey through the Solar System.

The story is rich in action and mystery — up to the very moment that Wollheim presents his villains. Then? Not good.

Rating: ***

Also recommended: THE CAVE HUNTERS by W. E. Scheele. World, $2.50 . . . PEOPLE AND PLACES by Margaret Mead. World, $4.95 . . . OFF INTO SPACE by M. O. Hyde. Whittlesey House, $2.50.

—FLOYD C. GALE

For the first time anywhere, here is a description of the greatest exhibit in the monumental Bernard Baroque Museum on Sigma Corvi IV.

ORIGINS OF THE GALACTIC SHORT-SNORTER

By EDWARD WELLEN

IT IS OWING to Timothy Root, a cambist of Sol III, that we have priceless specimens of mediums of exchange that the Universal Credit Card has rendered obsolete. In his dealings in alien monies, Timothy Root from time to time came across choice specimens, extracted them, attached them end to end, and in 2137 U.E. left to the Bernard Baroque Museum in Sigma Corvi IV the renowned Galactic "Short-Snorter."

This is not simply a souvenir of his calling, and of the trading and traveling it called for, but, because of his practice of writing on the margins of each bill as he acquired it some account of the society in which it functioned, a veritable compendium of the history of economics.

Indeed, to appreciate to the full these more or less worn catalysts, one must view them

not only as bits of various materials of various sizes, shapes, and colors, but as bits of history.

Needless to say, we do not always agree with Timothy Root's evaluations — in fact, we discount many, many of them. But it is as a trail-blazer that we honor him.

Inasmuch as the Short-Snorter winds and coils in and out of three large rooms of the Museum, we can give only a sampling of its riches here.

THERE is no better item to begin with than (a) in the exhibit. This is at once the largest and smallest piece of currency, compensating in size for its minuscule denomination. It is a $1/10^{10}$-*fuddo* bill and was in use on Megrez I for paying taxes. In 2020 U.E. the government there began taxing a person on what he valued himself. Psychiatrists from all over the Galaxy flocked there, and the natives flocked to the psychiatrists — to achieve feelings of inadequacy. The government made out fairly well on the take from the psychiatrists till the psychiatrists took to going to one another.

The Sterope IV trader who passed on to Timothy Root the next item (b) himself received it as a reward for supplying the authorities misleading information. A guilt-filled Steropean had yielded himself up for the killing of a leading citizen. To substantiate his confession, he furnished details only the killer could know. One detail he was unaware of — the state had just emptied the state treasury to build a new Treasury Building. Knowing a murder trial would cost the state over 1,000,000 *lemuc*, it had given secret strict instructions to prevent a trial. The trader, a brother-in-law of the police commissioner (and, incidentally, a sub-son-in-law of the builder), came forward and to the great relief of the state furnished the self-styled killer with an alibi.

(c) This charred banknote is a relic of El Kophrah III. Timothy Root came across it, with "nervous belly," in his words, poking through rubble. The planet was in ruins. But the scattering of starving survivors had one remnant of pride. They had, before the attack by El Kophrah V, succeeded, by cutting defense-research spending, in balancing the budget.

(d) A reserve note from Alcyone II. This is little more than play money for second childhood. One result of longer life-expectancy was the postponing of inheritance till the heirs were themselves rich in years, and, because of welfare benefits, in no need of such windfalls, which soon became a mere matter of form. This kind of note came mostly into play in the buying and selling of pasts — contracts for the purchase or sale of produce raised, harvested, delivered and eaten years before.

AND THIS leads us to another example (e) of non-monetary money, the scrip of Maia V. This is not currency *per se* but a symbol of a product that the currency would have bought. This particular civilization was attempting to move from material gain to the purely spiritual. For the benefit of those of its citizens who were still in the intermediate stages, the government printed scrip bearing the names of coveted objects and distributed them free, in lieu of the objects themselves. In accord with its policy of gradually eliminating the main physical stumbling block, the money mart, the government each year took away another exchange seat. The members had to compete physically for the remaining seats. The narrowing group of survivors, striving to stay in condition to maintain their sitting, grew more and more fiercely engrossed with the wholly physical. The last two felt their joint strength was enough to enable them to turn the tables on the government. It was. They pensioned off the deposed leaders with scrip bearing titles of power.

(f) A non-negotiable instrument from Talitha IX. A suave, persuasive missionary to that planet, hoping a wealthy elderly native lady would endow his mission, sold her on the transmigration of souls. With unremitting hatred, he listened to the reading of her will. She had left all her money and effects to herself. Her estate has remained intact, as the executors have so far been unable to determine which if any of the life-forms of Talitha IX she has come back as.

(g) This is a replica; the original note vanished in a frightening puff shortly after the transaction in which Timothy Root obtained it. The Electra VII government designed its money to encourage spending and discourage hoarding. The note bore a printed circuit and a timing device that set off the note at some indeterminate moment within six Terran months of issue. Whoever had possession of the note at the time was left with a hole burned in his pocket.

(h) The opposite extreme — a bill that is practically indestructible. It was in this currency that the government of Alcor III paid off migrant workers who had erected a dome on a new satellite. This payoff resulted in the workers blasting the dome to shards — not out of eagerness for more work in rebuilding the

dome, but out of resentment. They had worked to get the money in order to sacrifice it as a burnt offering of the fruit of their labors. Alcor III made a hasty deal for the fulminating Electra VII money and the migrant workers rebuilt the dome. The money went off just before the dome was finished and they blew it up again.

(i) A banknote from Aldebaran I. The luminosity of the money rubs off; the richer the person, the more he glowed. Naturally, to preserve this distinction of status, the government had to lay down restrictions on the passing of notes. For example, tellers and clerks were not allowed to handle money.

FROM Merope I comes exhibit (j). As automation and specialization more and more removed the sense of actually having to do with production, people of this planet grew more and more uneasy. They found it hard to justify their economic upkeep.

To give people the feeling that they were really earning the money, the government turned out its notes in the form of a jigsaw puzzle. One had to piece it together before it could be banked or spent.

This worked for a time, but the notes had to become increasingly difficult to assemble, to make an acceptable work week. This specimen is one of the last notes issued. A piece is missing. This is not owing to any slip-up on the part of Timothy Root. It was a deliberate omission, a shameful, debasing device of the government's to put off the final reckoning, which came a week later.

— EDWARD WELLEN

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THE HOURS ARE GOOD



No doubt of it, success calls for a salute — but a one-gun salute?

By GORDON R. DICKSON

Illustrated by Burns

THE mists of preconditioning rolled away. Harold Smith-Jones came back to himself on the hospital-like metal table of the Technical Center. They were just cranking the hood up off him.

"There you go," said one of the white-coated technicians, giving him a hand up. Off the table and once more on his feet, Harold frowned at the youngster.

" — *sir!*" he corrected.

"There you go, sir," the technician made haste to amend.

Harold's frown relaxed. He did not approve of this modern laxity — but they were good boys. He did not approve of riding subordinates, either.

He allowed himself to be helped on with his regency coat. A tall, blond young boy was standing back from the group a bit, waiting. His new decoy, no

doubt. A good type, in jumper and slacks, athletic, his only adornment the thin, sharp-edged strip of polished steel that held the watch on his wrist. The boy was somewhat tight-faced and looked nervous.

"Cheer up, there!" said Harold, giving him a friendly whack on the back. "All in the day's work."

The decoy managed a grin. A trifle sick — but a grin. Good lad, thought Harold, and, leaving the room, headed out for the job.

As he stepped, a moment later, out of the gray building's austere entrance, the brilliant September sunlight struck him a sudden, dazzling blow, and for a moment the street before him wavered and blurred.

"Steady on, now — " he thought, catching hold of the left arch of the entrance. He felt the gray stone rough under his palms, took a deep breath, and the street steadied and came back in focus.

The preconditioning again, of course, he told himself. It must be he had developed a sensitivity to the hypnotic drug they used to put him in a receptive state for instructions. Slight allergic reaction on his part, possibly. He made a mental note to mention the fact in his report later.

There was no point in his being uncomfortable. On the other hand, it would hardly do to take on a job without the protection of full preconditioning. Under the latest laws dealing with this sort of thing, the opposition had the right to question him if they happened to get their hands on him before he reached the street afterward. Only if he showed obvious evidence of preconditioning, so that he could tell them nothing of how he had planned the job, would there be no point in their doing so. And such questioning could be — well, there was no point in dwelling on unpleasant details.

Not that anything would go wrong. Not with a job he himself had researched and planned. Not with a possible new world's record staring him in the face.

Thirty-four consecutives. *Thirty-four!* Without a hitch, or a scratch upon him. He would take a little vacation after this one, thought Harold. Rest on his laurels.

He took another deep breath and stepped hard on his left foot. The outline of the small plastic gun could be felt through the inner sole, and at the feel of it the old magic flooded through him once again, like a spate of warm wine. Ah, he thought, never mind fame and riches, never mind palaces and beautiful women. Give me a gun.

With confidence and even good humor returned, he got down onto the nearest strip of the moving sidewalk before him and let it carry him off.

The sidewalk slid him off down the block and swept around a corner. As he came around the curve, he caught sight of his own dark image, obscurely reflected in a passing store display window. Perfect, perfect!

A HEAVY-BODIED, somewhat small man in regency coat, breeches and jackboots — with lilies of the valley in the little vases at each ankle. Thank God nowadays everybody dressed the way they wished. When he had been a boy, back in the nineteen-sixties, everybody he remembered had dressed alike. But now, with the overpopulation pressures, nobody cared much whether the individual lived or died, let alone how he dressed. A damned, dull time, the past, no matter what the historical entertainments liked to pretend. He preferred the present.

Of course, for business reasons, mainly. With any costume permissible, it was that much easier to create the image of a harmless, pompous, little fat man.

On the other hand, thought Harold, his feet changing sideways without consulting his brain, maybe his liking for the present was based on the fact he was in a special situation. Few people had his opportunities for what you might call excitement and adventure. After all, he reminded himself, he had originally intended to be a wine-taster, having that wonderful discrimination of taste that is born in one person in a million. If it hadn't been for that little psychotic upset (but everyone had them these days) he might not have lost it, and never gone into this business at all. And never discovered what an aptitude he had for it. Ah, yes — *"Some are born great. Some have greatness thrust upon them . . ."*

On the other hand . . . Harold found himself glancing at a street sign, and changed to another moving sidewalk with the automated reaction of good preconditioning. On the other hand, aptitude itself was really only the cornerstone of his success. Study, study — plan, plan — practice, practice — *that* was the real secret; that and his attention to details like seldom using the same decoy more than twice, and little touches like the lilies of the valley on his boots. And the man in the street thought all it took was a good target eye and a touch of sadism.

Harold stepped off the sidewalk into an entrance blazoned above with the legend MOTHER TURNER'S TEA ROOMS. Marvelous,

thought Harold, the way the preconditioning had brought him right to the place when every jot of knowledge about the job had been hidden from his mind by the hypnotic block. He'd had no idea where he was heading until the moment of recognition right now. The boys in the technical department deserved a commendation in his report. And would get it.

Entering, he nodded to himself. One of the decently exclusive gathering places. Wisely, these places kept their prices up and excluded the salaried mob, who never ceased to be baffled by the fact that the Tea Rooms offered no better drinks or accommodations than their own cocktail lounges. They missed the point entirely.

Harold passed on into a dim-lit foyer. Two men converged on him immediately.

"Mind stepping on this metal plate, sir?" — hum of detectors.

"Excuse me, sir." — hands patting him swiftly all over.

"Not at all, boys. I know you've got a job to do." Harold's voice rang heartily; a generous man, a jolly, fat man with an untroubled conscience. With a cheerful wave of his hand, he turned to the right. There, before an arched interior entrance, was a placard.

WILLIAM X. KLANNERT
Editorial Auction

THAT'S right — the little nodule of pre-planted information said in Harold's head, releasing its interior surprise of information. Klannert was the author of that best-selling new philosophical novel, *Existence's Worth;* and this was one of those publicity affairs promoted by his publishers under the guise of auctioning off a subsidiary right or two. Really, just a good public relations excuse to introduce Klannert to magazine editors, TV and film people, etc. He himself, Harold pre-remembered suddenly, was supposed to edit one of the intellectual weeklies under the name of Spence.

"Oh, Mr. Spence! *Here* you are! Martini?"

Harold became suddenly aware of a seductive blonde in flame-purple, standing just inside the entrance to the placarded room and tempting him in with a full cocktail glass. A hostess, of course — preconditioned to recognize all those to whom invitations had been distributed. Harold himself (or the technical boys) had been thorough with this detail, too. Harold went graciously toward her.

"Why, thanks, no," he said. "I never drink." True enough. Did the gunmen of the old West — the good ones, that is — drink while awaiting their moment of truth? And how much more foolish for Harold. "Iced tea, perhaps."

"Of course, Mr. Spence. Of *course!*"

She swept off to get him one. He glanced about the room. There, that was Klannert over there — the peaceful-faced, silver-haired man seated on the little dais at the end of the oval room, a crowd clustered around him.

"Your iced tea, Mr. Spence."

"Thank you, ma'mselle. Cheers!"

"Oh, *cheerio*, Mr. Spence!"

He continued on into the room, glass in hand, caught up immediately in the good-sized crowd.

"Oops, terribly sorry — " He had collided with a small brunette.

"My fault, really. Say, I don't know you, do I? I'm Hepzibah Collins. *Wasteland.*"

"Aneas Spence. *The Fabliau Weekly.*"

"You must give me your biog and I'll have it preconditioned into me the next time at the office. I do feel it's everybody's duty to know everyone they meet, don't you?"

"Absolutely." Harold fumbled artistically in a huge pocket of his regency coat. "I don't seem to have a biog slip with me — "

"Oh, dear. Well, tape it to me. There's Samantha! Sam!"

She disappeared into the crowd. Moving off himself, Harold came on to a small empty balcony and stepped up on it for a look at the crowd.

The number of people he saw rang a sudden icy tocsin of warning in his mind. There were at least twenty or thirty more here than his formal estimate of attendance had calculated. In a small room with a single exit, such a mob could hamper escape; and he would not legally be free from capture or reprisal until he was actually out of the building.

Harold carefully set down his glass of iced tea and took another deep breath, putting his weight once more on his left foot to feel the solid shape of the gun. The situation at once became clearer. He congratulated himself on his early study of Yoga. Like every other bit of knowledge he had painstakingly acquired, it paid off a thousandfold at times.

NOW THAT he thought of it more objectively, the crowd might not hamper him. It might even help him by interfering with pursuit. Harold smiled. Once again his wisdom in leaving the final situation fluid and adaptable was proving itself.

He turned his attention to the business of spotting Klannert's

bodyguards. Klannert would be expecting someone to try to do a job on him sooner or later. Everyone in the public eye knew such things were inevitable. Harold let his gaze search the crowd. That girl — Hepzibah Collins, the *Wasteland* editor — was one, of course. An expert frisker, undoubtedly; her collision with him would have been for the purpose of doubling-checking the detectives' search. Odd existence, thought Harold, momentarily struck by that strange, sad, philosophical turn of mind that had been growing on him these last few years. Imagine making a living going through life bumping up against people! Still, some sorts of persons might actually enjoy it.

The hostess was undoubtedly another.

And then that tall, heavy senatorial type. An excellent actor, but Harold had not studied over fifty thousand job reports in the past fifteen years for nothing. This man had been a bodyguard in the Claire Dumont job in April '89.

Then there was — good lord, whom did they expect to fool with that? That beetle-browed plug-ugly who was supposed, no doubt, to look so much like a bodyguard that nobody could suspect he would be one. And that was the lot — no, wait. That small old lady over there. She looked perfectly innocent; but the minute Harold's eyes noted the way she held her silver mesh purse, he knew. Those hands had had judo and karate training.

Harold paused, out of thoroughness, to take one last survey of the crowd. But there were no more opposition people to be uncovered. If there had been, he would have known who they were, even if his conscious gaze could find no flaw in them. Sixth sense, in his case, so many people in the Organization said. Nothing of the sort! It was the result of long years of study so intense that few minds could have stood up under it.

But it was time for that decoy of his to be here. Harold turned toward the entrance and spotted the slacks-and-jumper outfit. Then he stiffened slightly. The young fool!

His decoy had brought a good-looking redheaded girl along as part of his camouflage. What was the matter with the boy? Had he been asleep during Harold's lectures to the apprentice classes? A decoy's job was to draw the attention of the bodyguards *gradually* upon himself. Any woman could either attract too much attention or else sidetrack it unduly. With this woman — well, it was damned lucky that Harold's timetable had not called for elaborate pre-action proceedings.

For the boy's own good, Harold should censure him in his report. But on the other hand, he thought, softening, why make an official matter of it? Teach the lad a lesson instead — Harold smiled slightly to himself — by taking that good-looking redhead away from him afterward. Harold seldom went out of his way now for female companionship, but it was an accepted fact that no woman could resist a successful professional in his line of work. And it would drive home to the boy that lessons were to be learned. Possibly save his life as well, someday.

It was time to begin work.

HAROLD left the little balcony and went down into the crowd. The cocktails, he noticed, had been flowing freely and the people were already beginning to clump in little gossipy or argumentative groups. He wandered around a while and then joined one about halfway between the balcony and the dais where Klannert still sat.

" — Nobel Prize," a short, belligerent, broad-shouldered, middle-aged man was saying. He had a bushy, black, ill-trimmed spade beard which he was thrusting at all his hearers. "Deserved every cent of it! What? Man *is* more than merely a sustaining mechanism! No one like Klannert!"

"Come now," said Harold, smoothly intruding. "Mechanism, after all, is an accepted sociological theory. All of us like to see it questioned, for form's sake, if nothing else. But to throw it out completely —"

"Who're you?" said the bearded man.

"Spence. *Fabliau Weekly*."

"I know your rag!" said the bearded man. "Didn't think you'd have the nerve to stick your nose in here!"

Smiling — for the *Fabliau* was wholly imaginary — Harold bent his head politely.

"I think my lead article in the issue before last answers your arguments," he said.

"Lies, lies, lies — " sputtered the bearded man. But Harold was already on his way to another group one step nearer to Klannert.

He paused with this group — they were also singing Klannert's praises, but Harold refused to let himself be drawn into conversation this time. He had already made the point — for anyone who happened to be taking an unduly suspicious interest in him — that he was not trying to make himself unobtrusive by hiding his own point of view. In



fact, he had avoided drawing unusual attention to himself by drawing a small amount of the usual sort of attention to himself. At the second group he listened a while, smiled noncommittally and moved on.

That feeling, almost of sadness, slipped over him again as he continued to circle about the room.

It was all so simple, if you knew what you were doing. Experience taught you what the opposition would expect. You gave them something else. It was as easy as that. So simple it was almost a little pitiful.

Look at Klannert up there. A good man, by the standards of those who considered themselves good men. But he had offended somebody or other. Who, of course, would never be known; the Organization was strict about protecting clients. But somewhere, somebody had signed the necessary credit chit — and here was Harold, about to put a period to the life that had been considered good.

And for what? Not really for the money. A little for the excitement of the business. Possibly a little more because this would make a new world's record. But really because that was the way the world wagged these days — for himself, for Klannert, for everybody.

WE ARE ALL bound by the wheel of life, thought Harold, with a touch of soft melancholy. All to the same wheel. After this, he *would* take a vacation, get away for a long rest to some place where he could be a common man once more among men. It was time, and overtime, for a change.

He stopped. He had worked his way clear across the room on a slant. He stood now by some egg-yellow wall draperies, not fifteen feet from where Klannert sat. Elsewhere about the room, the people were all huddled in small, busily talking groups. There was space to run between the groups. Now. Once excitement had struck, they would mill around, getting in each other's way and in the way of pursuit. But by that time, he should be in the foyer, if not out into the safety of the public street.

He looked for his decoy. There the boy was, still with the girl, standing out among the less attractive mortals grouped around Klannert, very satisfactorily. The hostess, Harold noted with satisfaction, was standing with apparent casualness quite close to them.

Harold smiled entirely to himself, internally, with that same touch of melancholy. He glanced around without seeming to. His glass of iced tea was almost

finished. He drained the last few drops from it; and as he did, it slipped from his fingers.

It dropped with a soft thump to the thick carpet, rolling half out of sight under the draperies. Exclaiming in annoyance, he bent over as if to pick it up.

Instead, without any undue attempt at concealment, his hand went to the toe of his left boot. Toe and hand lifted together, the top part of the boot and bootsole peeled away from the bottom half, and the plastic gun slipped out into his fingers. He straightened up —

— and something tremendously heavy crashed down on him from behind. He was aware of himself suddenly, on his knees and going down further, with the full weight of another adult on his back. His head was foggy. He could still see and hear, but everything had a dreamlike quality about it. He felt the thick, deep carpet pressing up against the palms of his hands as he flung them out to break his fall. He had a sudden kaleidoscopic glimpse of nearby faces turning to stare in his direction. And then, thin and clear, above the sound of voices still talking, he heard a woman scream.

The weight on his back rolled suddenly off. Turning his head, Harold saw that his assailant had been the belligerent, spade-bearded man who had been holding forth to the first group of talkers. The man was now scrambling to his feet and launching himself in the direction of the room's entrance. For a second the crowd opened out a little, and Harold had a sudden glimpse of his decoy, bare-wristed, running for the entrance, while the girl with him stopped and half turned, lifting a gun with cool expertness and sending several shots into the spade-bearded man.

Scrambling to his own feet as the spade-bearded man went down, Harold caught sight of Klannert stumbling down from the dais. His hands were up at his chest; and sticking out from between two fingers was a thin strip of metal, a strip of steel about the width of a wristwatch band. As Harold watched, Klannert's knees gave way and he sank down below the bodies of the people who were rushing toward him.

HAROLD grabbed at his fallen gun — but in that second, hard hands seized him and hustled him through the crowd. Twisting his head back over his shoulder, he saw he was in the grasp of one of the detective-bodyguards and an unidentified stranger. They impelled him swiftly into the lobby.

"They'll shoot me now — " thought Harold, his heart yammering at his throat. Then, like the thudding of some huge, sickening velvet hammer, despair came to shatter his panic. What did it matter? Caught on the job — a failure — execution left to a decoy. Or had he been double-crossed?

He became aware that those holding him had stopped, and the detective had stepped across the room, leaving Harold pinned by the stranger in an efficient judo hold. Harold could not turn his head to see, or make out the words of the conversation. Suddenly they were interrupted by an ugly laugh from the detective. Heavy footsteps returned behind him.

He was grabbed and rushed forward to the open entrance — hurled roughly out into the street.

Harold staggered, windmilling for balance on the slideway outside. Laughter echoed behind him. He whirled, wild with rage. The gun was still clutched in his hand. They had forgotten it. He jerked it up before him —

— and, abruptly, the mists of preconditioning vanished from his brain. They left him with the suddenness of support jerked away. He stared at the entrance to Mother Turner's Tea Rooms, and then at the gun down in his hand. He began to weep.

Quite a crowd had accumulated about him. A city policeman came pushing through it, to stand before Harold, red-faced and sweating.

"All right, all right! Move on!" he shouted. The crowd started to drift away. He turned on Harold. "What're you doing with that in your hand? Don't you know it's illegal? Where's your license?"

Harold shook his head, unable to speak. The policeman snatched the gun from him and turned it over in two freckled hands. His expression faded from anger to exasperation. He shoved the gun back into Harold's hands and turned away.

"Get off the street," he said to Harold, and then, to those of the crowd that still lingered, "All right, all right — move along! The gun's a fake. He's only a decoy, just snapped out of conditioning. Nothing more to see. Move along now!" He shoved Harold impersonally. "You too."

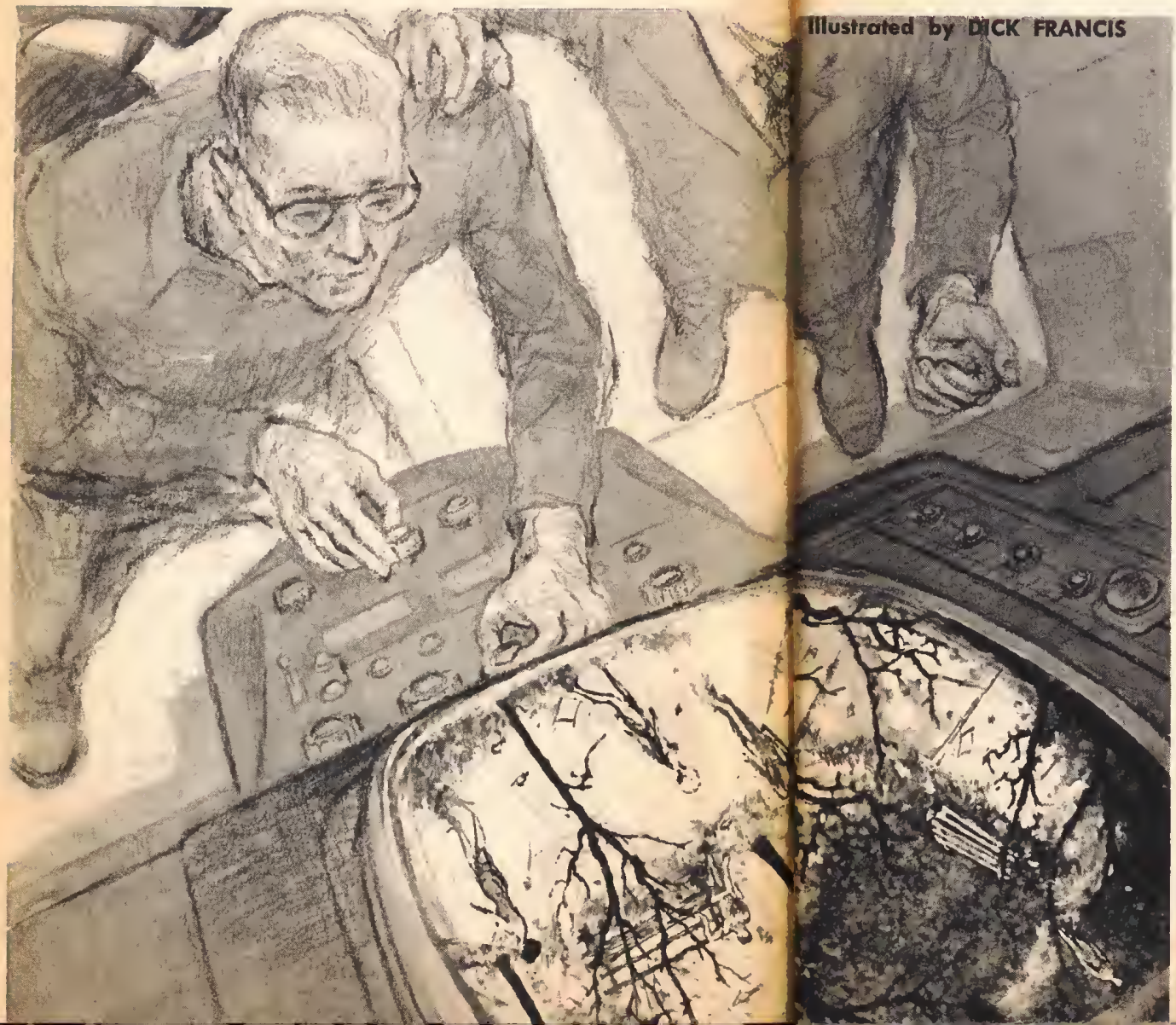
Harold moved off, weeping, clutching the imitation gun in his hand, the salt tears streaming down his face.

— GORDON R. DICKSON

Staghorn dared tug at the veil that hid the future. Maybe it wasn't a crime to look . . . maybe it was just that the future was ugly!

THE IMMORTALS

By DAVID DUNCAN



Illustrated by DICK FRANCIS

I

DR. CLARENCE PECCARY was an objective man. His increasing irritation was caused, he realized, by the fear that his conscience was going to intervene between him and the vast fortune that was definitely within his grasp. Millions. Billions! But he wanted to enjoy it.

He didn't want to skulk through life avoiding the eyes of everyone he met — particularly when his life might last for centuries. So he sat glowering at the rectangular screen that was located just above the control console of Roger Staghorn's great digital computer.

At the moment Peccary was ready to accuse Staghorn of having no conscience whatsoever. It was only through an act of scientific detachment that he reminded himself that Staghorn neither had a fortune to gain nor cared about gaining one. Staghorn's fulfillment was in Humanac, the name he'd given the electronic monster that presently claimed his full attention. He sat at the controls, his

eyes luminous behind the magnification of his thick lenses, his lanky frame arched forward for a better view of Humanac's screen. Far from showing annoyance at what he saw, there was a positive leer on his face.

As well there might be.

On the screen was the full color picture of a small park in what appeared to be the center of a medium-sized town. It was a shabby little park. Rags and tattered papers waggled indolently in the breeze. The grass was an unkempt, indifferent pattern of greens and browns, as though the caretaker took small pains in setting his sprinklers. Beyond the square was a church, its steeple listing dangerously, its windows broken and its heavy double doors sagging on their hinges.

Staghorn's leers and Dr. Peccary's glowers were not for the scenery, however, but for the people who wandered aimlessly through the little park and along the street beyond, carefully avoiding the area beneath the leaning steeple. All of them were uniformly young, ranging from perhaps seventeen at one extreme to no more than thirty at the other. When Dr. Peccary had first seen them, he'd cried out joyfully, "You see, Staghorn, all young! All handsome!" Then he'd stopped talking as he studied those in the foreground more closely.

Their clothing, to call it that, was most peculiar. It was rags.

Here and there was a garment that bore a resemblance to a dress or jacket or pair of trousers, but for the most part the people simply had chunks of cloth wrapped about them in a most careless fashion. Several would have been arrested for indecent exposure had they appeared anywhere except on Humanac's screen. However, they seemed indifferent to this — and to all else. A singularly attractive girl, in a costume that would have made a Cretan blush, didn't even get a second glance from a young Adonis who passed her on the walk. Nor did she bestow one on him. The park bench held more interest for her, so she sat down on it.

Peccary studied her more closely, then straightened with a start.

"I'LL be damned," he said. "That's Jenny Cheever!"

Staghorn continued to leer at the girl. "So you know her?"

"I know her father. He owns the local variety store. She's only twenty today, and there she is a hundred years from now, not a day older."

"Only her image, Dr. Peccary," Staghorn murmured. "Only her image. But a very pretty one."

Peccary came to his feet, unable to control his irritation any longer. "I won't believe it!" he said. "Somehow a piece of misinformation has been fed into that machine. Its calculations are all wrong!"

Staghorn refused to be perturbed. "But you just said you recognize the girl on the bench. I'd say that Humanac has to be working with needle-point accuracy to put recognizable people into a prediction."

"Then shift the scene! For all I know this part of town was turned into an insane asylum fifty years from now." The use of the past tense when speaking of a future event was not ungrammatical in the presence of Humanac. "Do you have the volume up?"

"Certainly. Can't you hear the birds twittering?"

"But I can't hear anyone talking."

"Perhaps it's a day of silence."

Staghorn took another long look at the girl on the parkbench and then turned to the controls, using the fine adjustment on the geographical locator. The screen flickered, blinked, and the scene changed. The two men studied it.

"Recognize it?" said Staghorn.

Peccary gave an affirmative grunt. "That's the Jefferson grammar school on Elm Street. I'm surprised it's still there. But, lord, as long as they haven't built a new one, you'd think they'd at least keep the old one repaired."

"Very shabby," Staghorn agreed.

It was. Large areas of the exterior plaster had fallen away. Windows were shattered, and here and there the broken slats of venetian blinds stuck through them. The shrubbery around the building was dead; weeds had sprung up through the cracks in the asphalt in the big play yard. There was no sign of children.

"Where is everyone?" Peccary demanded. "You must have the time control set for a Sunday or holiday."

"It's Tuesday," Staghorn said. Then both were silent because at that moment a child appeared, a boy of about eleven.

HE burst from the schoolhouse door and ran across the cracked asphalt toward the playground, glancing back over his shoulder as though expecting pursuit. Reaching the play apparatus he paused and looked around desperately. The metal standards for the swings were in place but no swings hung from them. The fulcrums for the seesaws were there but they held no wooden planks to permit teetering. The only piece of equipment that looked capable of affording pleasure was the slide.

It was a small one, only about six feet high, obviously designed for toddlers and not for a boy of eleven. Nonetheless, the boy headed for it eagerly.

But he'd hardly set foot upon the bottom step of the ladder when the schoolhouse door burst open a second time. A young woman charged toward him shouting, "Paul! Get down from there at once! Paul!"

She was an attractive woman, but her voice held a note of panic. She ran so swiftly that Paul, whose ascent of the ladder was accelerated rather than retarded by her command, hadn't quite reached the top when she seized him around the legs and tried to drag him down.

"Please, Miss Terry!" he pleaded desperately. "Just this once let me get to the top! Let me slide down it just once!"

"Get to the top?" Miss Terry was aghast. "You could fall and kill yourself. Down you come this instant!"

"Just one time!" Paul wailed. "Let me do it just once!"

Miss Terry paid no heed to his anguished cries. She tugged at his legs while Paul clung to the handrails. But he was the weaker of the two, and in a few seconds Miss Terry had torn him loose and set him on the ground. Then, seizing him firmly by the hand, she led him back toward the schoolhouse.

Paul went along, sniveling miserably. They entered the building and the play yard was once more silent and deserted.

"By God, Staghorn," Peccary thundered, "you've doctored it! You've deliberately fed false information into Humanac's memory cells!"

Staghorn turned to glare at his guest, his eyes flaming at the outrageous suggestion. "The only hypothetical element I've fed into Humanac is your Y Hormone, Dr. Peccary! You saw me do it. You watched me check the computer before we started."

"I refuse to believe that my Y Hormone will bring about the consequences that machine is predicting!"

"It's the only new factor that was added."

"How can you say that? During the next hundred years a thousand other factors can enter in."

"But the Y Hormone bears an essential relationship to the whole. Sit down and stop waving your arms. I'm going to see if we can get into the school."

Peccary sat down, seething.

IT had been a mistake to bring his Y Hormone to Staghorn. It was simply that he'd been thinking of himself as such a benefactor to the human race that he couldn't wait to see a sample of the bright future he intended to create.

"Think of it, Staghorn!" he'd said happily, earlier in the evening. "The phrase 'art is long and time is fleeting' won't mean anything any more! Artists will have hundreds of years to paint their pictures. Think of the books that will be written, the music that will be composed, the magnificent cities that will be built! Everyone will have time enough to achieve perfection. Think of your work and mine. We'll live long enough to unravel all the mysteries of the universe!"

Staghorn had said nothing. Instead, he'd uncorked the small bottle Dr. Peccary had given him and sniffed at it.

The bottle contained a sample of the Y Hormone which Dr. Peccary had spent many years developing. Its principal ingredient was a glandular extract from insects, an organic compound that controlled the insects' aging process. If administered artificially, it could keep insects in the larval stage almost indefinitely.

Dr. Peccary's great contribution had been to synthesize this extract — which affected only insects — with protein elements that could be assimilated by mammals and humans. It had required years of experimentation, but the result was his Y Hormone — Y for Youth.

In his laboratory he now had playful kittens that were six years old and puppies that should have been fully grown dogs. The only human he'd so far experimented on was himself. But because he'd started taking the hormone only recently, he was as yet unable to say positively that it was responsible for the splendid health he was enjoying. His impatience to know the sociological consequences of the hormone had made him bring a sample of it to Staghorn.

After sniffing at the bottle, Staghorn had poured its contents into Humanac's analyzer.

The giant computer gurgled and belched a few seconds while it assessed the nature of the formula. Then Staghorn connected the analyzer with the machine's memory units.

As far as Humanac was concerned, the Y Hormone was now an accepted part of human history.

But, except for this one added factor, the rest of Humanac's vast memory was solidly based upon the complete known history of the earth and the human race. Its principles of operation were the same as those controlling other electronic "brains," which could be programmed to predict tides, weather, election results or the state of a department-store inventory at any given date in the future. Humanac differed chiefly in the tremendously greater capacity of its memory cells. Over the years it had digested thousands of books, codifying and coordinating the information as fast as

it was received. Its photocells had recorded millions of visual impressions. Its auditory units had absorbed the music and languages of the centuries. And its methods of evaluation had been given a strictly human touch by feeding into its resistance chambers the cephalic wave patterns produced by the brains of Staghorn's colleagues.

AN added feature, though by no means an original one, was the screen upon which Humanac produced visually the events of the time and place for which the controls were set.

This screen was simply the big end of a cathode-ray tube, similar to those used in television sets. It was adapted from I.B.M.'s 704 electronic computer used by the Vanguard tracking center to produce visual predictions of the orbits of artificial satellites.

Staghorn was constantly having trouble explaining to people that Humanac was not a time machine that could look into the past or future. Its pictures of past events were based upon information already present in its memory cells. Its pictures of future events were predictions calculated according to the laws of probability. But because Humanac, unlike a human, never forgot any of the million and one variables impinging upon any human situation, its predictions were startlingly accurate.

Humanac had never been exposed to pictures of Dr. Peccary's home town nor to those of a girl named Jenny Cheever. It arrived at the likeness of both town and girl through a purely mathematical process.

Staghorn's ultimate purpose in building the machine was to use it in developing a true science of history. Because Humanac was only a machine, Staghorn could alter its memory at will. By removing the tiny unit upon which the Battle of Hastings was recorded and then "re-playing" English history without it, he could find out what actual effect that particular battle had.

He was surprised to discover that it had very little. According to Humanac, the Normans would have conquered England anyway a few months later.

At another time, while reviewing the events leading up to the American Revolution, Humanac had produced a picture of Benjamin Franklin kissing a beautiful young woman in the office of his printing shop. On impulse Staghorn removed this seemingly insignificant event from Humanac's memory and then turned the time dial forward to the present to see what effect, if any, the episode had had upon history.

To his amazement, with that single kiss missing, Humanac produced a picture of the American continent composed of six different nations speaking French, German, Chinese, Hindu, Arabic and Muskogean — the last being the language of an Indian nation occupying the Mississippi Valley and extending northward to Lake Winnepeg. It served as a buffer state between the Hindus and Chinese in the west and the French, Germans and Arabs to the east.

IT was Humanac's ability to predict the future consequences of any hypothetical event, however, that made it an instrument capable of revolutionizing history. Once its dependability was thoroughly established, it would be possible for a Secretary of State to submit to Humanac the contents of a note intended for a foreign country, then turn the time controls ahead and get Humanac's prediction of the note's consequences.

If the consequences were good, the note would then be sent.

If they were bad, the Secretary could destroy the note and try others — until he composed one that produced the desired result.

Humanac's flaw was that it had no way of explaining the predictions produced on its screen. It merely showed what would happen when and if certain things were done. It left it up to the human operator to figure out *why* things happened that way.

This was what was troubling Dr. Peccary.

He could see not the remotest relationship between his Y Hormone and the fact that a mathematical probability named Miss Terry should refuse another mathematical probability named Paul permission to climb to the top of a six-foot playground slide.

Meanwhile Staghorn had been using the fine adjustment on the geographic locator and now grunted his satisfaction. "Good! We're in the building, at least."

On the screen was a dusky corridor. On either side of it were classroom doors, some closed, some ajar. Staghorn moved his hand from the fine adjustment to the even more delicate vernier control which permitted him to shift the geographic focus inches at a time. The focus drifted slowly forward to one of the half-open doors, and then he and Dr. Peccary were able to see into the classroom.

It was deserted. Desks were thick with dust. Books, yellow with age, were strewn on the floor.

Staghorn's hand sought the vernier control again. The picture led them on down the corridor to another open door.

Again it was a scene of desolation.

"This can have nothing to do

with my Y Hormone!" Peccary insisted.

"Then why is your picture on the wall there?" Staghorn said with a note of malicious pleasure.

Dr. Peccary looked and started. On the classroom wall was a faded photograph of himself. Except that he was wearing a different suit in the picture, he looked just as he looked at the present moment. Staghorn got a closer focus on the photograph so that Peccary could read the legend beneath it. *Dr. Clarence Peccary, the man who gave the world the Y Hormone.*

"All right then," said Peccary, somewhat modified by this tribute. "If they put my picture on school room walls a hundred years from now, it means I'm an honored man, a man the world admires. And therefore the Y Hormone *can't* be the cause of all this desolation!"

"I've found that Humanac's reasoning and human reasoning differ in many ways," said Staghorn. On the screen they were out in the corridor again when from somewhere ahead came a woman's voice.

"You may recite now, Paul. Please stand up."

"Ah, that sounds like Miss Terry," said Staghorn. He fingered the vernier control. The focal point slid forward along the corridor.

"Stand up and recite, Paul," Miss Terry said more sharply.

"I think they're in the room on the left," said Peccary.

II

THE focus shifted to the open door and then Peccary and Staghorn could see into the classroom. This one was in slightly better order than the others and was occupied by two people. In front sat Miss Terry, obviously the teacher, and at one of the desks sat Paul. He seemed to be the entire class. At Miss Terry's urging he was coming to his feet, his face still stained with tears. He held his book a few inches from his nose and stared over the top of it sullenly.

"Go ahead, Paul," said Miss Terry, sweetly stubborn. "I'm waiting."

Paul looked at his book and read from it in a monotone, enunciating each word carefully as though it had no relationship to the other words. "I am a human being and as long as I obey the six rules I shall live forever."

"Very good, Paul. Now read the six rules."

Paul sniffled loudly and commenced reading again. "Rule one: I must never go near fire or my clothing may catch aflame and burn me up. Rule two: I must keep away from deep water or I may fall in and drown. Rule three: I must stay away from high places or I may fall and dash my brains out." He paused to sniffle and wipe his nose on his sleeve, then sighed and continued dismally. "Rule four: I must never play with sharp things or I may cut myself and bleed to death. Rule five: I must never ride horses or I may fall off and break my neck." Paul paused, lowering his book.

"And the sixth rule?" said Miss Terry. "Go ahead and read the sixth rule."

Reluctantly Paul lifted his book. "Rule six: Starting when I'm twenty-one I must take Dr. Peccary's Y Hormone once a week to keep me young and healthy forever."

"Excellent, Paul!" said Miss Terry. "And which rule were you breaking just now on the playground?"

"I was breaking Rule Three," Paul said, then quoted sadly, "I must stay away from high places or I may fall and dash my brains out."

DR. PECCARY was on his feet stomping around in front of the computer. "Sheer idiocy," he muttered. "He doesn't have any brains to dash out! I'll admit that a computer with sufficient information about the state of the world might be able to make accurate predictions of events a few months or possibly a year into the future — but not one hundred years! In that long an interval even the most trivial error could distort every circuit in the machine." He jabbed a finger toward the screen where Paul was seated at his desk again. "And that's what that picture is — a distortion. I'm not going to let it influence me one bit in what I intend to — " He broke off because of what was happening on the screen.

From somewhere outside the school building came the wail of a deep-throated alarm. Both Miss Terry and Paul were on their feet and by their expressions, terrified.

"The Atavars!" Paul cried, his entire body shaking.

"To the basement, Paul!" Miss Terry's face was blanched as she grasped Paul's hand and headed toward the door. But halfway there, both came to a halt, breathless and staring.

A powerful bearded man strode into the classroom.

Paul and Miss Terry fell back as he advanced. He was a man of about fifty, his bushy hair shot with gray, his eyes cold and blue. He was followed by two younger men who studied Paul and Miss Terry with interest. All three wore rough work clothing.

The bearded man pointed at Paul. "There's the boy," he said quietly. "Take him."

Paul let out a shriek of terror and fled into a corner as the two men advanced. He clawed futilely

as they laid hands on him. "For God's sake, shut up," one of the men said with more disgust than anger. He pinioned Paul's arms while the other man bound them together with a strip of cloth.

Miss Terry meanwhile had collapsed into her chair. One of Paul's captors glanced at her and spoke to the bearded man. "What about her?"

The bearded man stepped close to Miss Terry and put a hand on her shoulder. She recoiled as from a snake. "How old are you?" he asked. Miss Terry made some inarticulate squeaks and the man spoke more sharply. "When were you born?"

"Two thousand four," she managed to stutter.

The bearded man considered this and shook his head. "Over fifty. By that time they're hopeless. Leave her and bring the boy."

Miss Terry let out an agonized wail of protest and fainted across her desk. One of the men slung Paul over his shoulder and the bearded leader led the group from the room.

"AMAZING," murmured Staghorn. "Absolutely amazing. One never knows what to expect."

"Pure gibberish," said Peccary, then betrayed his interest by saying, "Can you follow them?"

"I'm trying to." Staghorn worked at the geographic adjustment and finally got the screen focused on the corridor again. It was deserted. The bearded man and his companions had already departed. Staghorn touched the controls again, the screen flickered and once more the little park came into focus. But now it, too, was deserted. None of the ragged men and women were in sight, neither in the park nor on the street beyond. Staghorn twisted the focus in all directions without discovering anyone.

"That whistle we heard was obviously some kind of alarm," he said. "Everyone must be in hiding — from the Atavars, whoever they are. I strongly suspect that bearded fellow of being one."

"You might as well shut it off, Staghorn," Dr. Peccary said coldly. "It's too much nonsense for any sane man to swallow. And unless that machine can provide a full and satisfactory explanation as to why my Y Hormone will bring about the conditions depicted on that screen, I see no reason to keep the hormone off the market."

Staghorn turned from the controls to study his companion. "The only possible way that Humanac could give us the entire background of events leading up to what we've just seen would be to set the time control to the present and then leave the machine running until it arrived at this same period again. That would take a

hundred years, and I'm not going to sit here that long. What's more, I'm not going to touch your Y Hormone even if you do put it on the market."

"There'll be plenty who will!"

"That's what Humanac says, yes."

Dr. Peccary gestured despairingly. After all, he did have a conscience. "I simply don't believe my hormone can be responsible!"

"I'll remind you that your picture was on the classroom wall and that the sixth rule read by that boy indicated that he was supposed to start using your hormone when he reached the age of twenty-one. That would be about the age to stop growing older."

"That boy is nothing but a mathematical probability!"

"THAT'S all you and I are," Staghorn said owlishly. "Mathematical probabilities. Despite Omar, nothing exactly like either of us has ever existed before or will exist again."

"But damn it, Staghorn . . ." Dr. Peccary sat down, his face in his hands. "It's worth millions! I've invested years of work and all the money I could scrape together. I don't see anything wrong in a scientist's profiting by his discoveries. And to keep it off the market just because that insane computer says that a hundred years from now—" He broke off, glaring at Humanac's screen which was still focused on the deserted park. "It simply doesn't make sense! The machine doesn't give any reasons for anything. If there were a way I could talk directly to some of those mathematical probabilities, question them, ask them what it's all about . . ." He was on his feet, striding back and forth before the computer again.

"Perhaps there is a way," Staghorn said quietly.

"Eh?"

"I said that it may be possible for you to talk with them."

"How?"

"By making your mind a temporary part of the computer."

Peccary studied the huge machine apprehensively — its ranks of memory units, its chambers of flickering tubes, the labyrinth of circuits. "How would you go about it?"

"I put you in the transmitter," Staghorn said. He stepped away from the console and slid back a panel to reveal a niche with a seat in it. Above the seat was a sort of helmet that resembled a hair drier in a beauty parlor, except that it was studded with hundreds of tiny magnets and transistors. Staghorn indicated the helmet. "This picks up and amplifies brain waves. I've used it to record the cephalic wave pattern of about a hundred men and women. The re-

cordings are built into the computer, enabling Humanac to assign a mathematical evaluation to the influence of human emotion in making historic decisions. In your case, instead of making a recording of your brain waves, I'd feed the impulses directly into Humanac's memory units."

"And what would happen then?"

"I'm not altogether sure," said Staghorn, and it seemed to Peccary that Staghorn was finding a definite relish in his uncertainty. "I've never tried the experiment before."

"I might get electrocuted?"

"No. There's no danger of that happening. The current that activates the transmitter comes from your own brain, and as you know, such electrical impulses are extremely feeble. That isn't what worries me."

"Well then, what does?"

"In some ways Humanac behaves peculiarly like a living organism. For example, there's one prediction it can never make. Several times I've fed into it the hypothetical information that the two opposing factions of the world have declared war. Naturally everyone would like to know about the outcome of such a war." Staghorn paused, gazing lovingly at his majestic creation.

"And what happens?" Dr. Peccary said impatiently.

"Nothing. That's just it. The moment I turn Humanac into the future to get a prediction, the screen goes dead. Do you know why it goes dead?" Staghorn looked at Peccary with a pleased smile and didn't wait for Peccary to cue him. "It goes dead because, if war were declared, Humanac would be the first target for enemy bombs. When it predicts a future event, it has to take all factors into consideration. If one of those factors is its own destruction, it can predict nothing beyond that moment."

PECCARY repeated this sentence in his mind while he slowly digested its meaning. What it seemed to mean was that, although Staghorn and Peccary thought of Humanac as only a complicated machine, Humanac's opinion of itself was altogether otherwise. It could foresee its own death.

"I often wonder," mused Staghorn, "about those people we see wandering around on Staghorn's screen. To us they're only images made by a stream of electrons hitting the end of a cathode ray tube. Their space and time is an illusion. All the same, Humanac comprises an entire system — a system modeled as accurately as possible on our own. It's just possible that the boy we saw, Paul, was experiencing a real terror."

Dr. Peccary examined Staghorn in amazement. He had often suspected that Staghorn's genius was tinged with madness. "You're not suggesting that those . . . those images are conscious?"

"Ah! What is consciousness?"

"I didn't come here to get into a metaphysical argument."

"No, but it's only fair for me to suggest the possible emotional hazzards involved in hooking you up to Humanac. Because you have to admit that *you'll* be conscious during the experiment."

"Certainly. But I'll be sitting right there." Peccary pointed to the seat in the transmitter unit.

"In a sense, yes. Very well, take your seat."

Peccary eyed the helmet uneasily "I'm not sure I want to do this."

"But you do want to make millions from the Y Hormone. And you want to enjoy it with a clear conscience. Perhaps it's as you say — there may be other factors involved. By knowing what they are you may be able to negate their influence." Staghorn's voice was a soft purr as he took Dr. Peccary's arm and urged him into the transmitter unit. Peccary sat down. The seat was small and hard.

"Just bear one thing in mind," Staghorn said. "Don't get lost. It will be best if you stay in the little park where I can see you and where you'll be in focus. Unless you're in focus it might be impossible to — ah — disengage you."

Dr. Peccary could find no meaning whatsoever in this statement, except confirmation of his suspicion that Staghorn was mad. He felt this so strongly that he started to rise from his seat and escape from the transmitter cell. But at that moment Staghorn lowered the helmet onto his head. The sensation he experienced was so novel and startling that he remained seated. For a second or two he could feel the tiny metallic contacts on the inside of the helmet pressing against his skull, but this sensation of physical pressure vanished almost at once. It was replaced by one of headlessness. His body up to his chin still seemed to be sitting in the transmitter — but his intellect had lost completely its sense of localization in the head.

He could think clearly enough, but had no notion as to the spot where his thoughts originated. Indeed, the whole concept of relative position seemed ridiculous. At the same instant he felt tall as a mountain and as low as a rug. His mind could fill the entire universe, while resting neatly in a thimble. He could also see Staghorn, for his eyes continued to function and transmit optical patterns, but precisely where he was while receiving these patterns he couldn't possibly say.

He heard Staghorn remark, "Fine. The connection is perfect. It's always better when the subject is bald. I'm going to switch you over into Humanac's circuits now."

Staghorn's hand moved across the controls and one of his long fingers flipped a switch.

THIS was the last Dr. Peccary saw of Roger Staghorn. Instantly he found himself standing in the center of the small park in his home town. His reaction was not one of alarm. Quite to the contrary, his immediate thought was one of surprise that he wasn't alarmed. Standing there in the little square felt entirely normal and proper.

Next he was jolted by the realization that he must be an image on Humanac's screen. He quickly looked about in all directions, half expecting to see Staghorn's huge face peering down from the sky like God. There was no sign of Staghorn, however. The world about him was as three-dimensional as any he'd ever known. He was in his home town a hundred years after he'd last seen it.

Good lord! He was a hundred and forty-two years old!

This realization was followed by a host of others. Like a man coming out of amnesia, his past began filling with memories. He was rich. He was the richest man on earth. His Y Hormone was used the world over. A mile away, on the outskirts of town, he could see a portion of his huge production plant. He lived in a majestic palace surrounded by every manner of automatic protective device. Protection? From what? And how had he dared to venture out here in the park alone? But wait . . . wait. It was all an illusion. Actually he was only an image on Humanac's screen, a mathematical probability.

He must keep that fact firmly in mind, or he might lose his mental balance.

He gazed about at the town, dismayed by its appearance. Not a person in sight. Not even an automobile. Of course, the motor car might have become obsolete during the passage of a hundred years. There must be some new mode of transportation — something undreamed of a century ago!

While he was wondering what this might be, he heard a clop-clop-clopping and was astonished to see three horsemen approaching the square. As they came closer he recognized them as the bearded man and his two companions.

The boy Paul was bound firmly behind one of the saddles.

A strange panic arose in Dr. Peccary's breast, but he managed to suppress it with a reminder that this was all illusion. He was here for purposes of information; he must have the courage to get it. So he forced himself to the curb at the edge of the park. When the riders were within speaking distance, he managed to hail them with, "Hey, you!"

His nervousness made his words harsh. But then, there was no reason why he should speak politely to kidnapers. He saw that Paul was conscious. The boy had a gag over his mouth but his eyes were open.

THE three riders reined in their horses and looked at Peccary with frank curiosity.

"Here's one that didn't hide," one of them remarked, in a tone that Dr. Peccary decided was disrespectful. He stepped forward boldly.

"May I ask what you intend to do with that boy?" he demanded.

"He wants to know what we intend to do with the boy," said the same man.

"Yes, I heard what he said," the bearded man remarked quietly. He hadn't ceased to study Peccary with his piercing blue eyes. Now he urged his horse closer. "You must be a stranger here, son?"

"Not exactly," said Peccary. "As a matter of fact, I was born here. That was some time ago and it's true I haven't been here recently." The way the bearded man stared at him made him extremely nervous. "But I'm sure that kidnaping is against the law. If you don't release that boy I'll have to — to make a citizen's arrest!" Peccary knew that his words sounded ridiculous. From the way the three riders exchanged glances it was evident that they thought the same thing.

"He's going to make a citizen's arrest," commented the one who liked to repeat whatever Peccary said.

"Hush," said the bearded leader. And then to Peccary, "What's your name, son?"

"Clarence Peccary. If you don't do as I say I'll — " He stopped short, his heart leaping as the force of his indiscretion struck him.

The three men had been struck also.

The two younger ones were already on the ground, one on either side of him. Only the bearded man remained mounted. He leaned forward. "I thought you looked familiar. You're *Doctor* Peccary of the Y Hormone?" His voice was a menacing whisper. Peccary finally answered with a slow nod.

"He must have flipped, running around alone like this," a man beside him said. "However, let's never insult fortune!"

This was the last Dr. Peccary heard. For at that instant one of the men — he never knew which — struck him forcibly over the head with a blunt instrument.

III

AT Humanac's controls Roger Staghorn leaped to his feet in alarm as he saw what was happening on the screen.

Peccary had collapsed now. The two men were draping him across the bearded man's saddle. There wasn't an instant to lose! Staghorn leaped to the transmitter cell where Peccary's material body was seated, his eyes peacefully closed. Staghorn flipped the switch to disengage Peccary's consciousness from Humanac's circuits.

Nothing happened. Peccary's body remained as before, blissfully asleep.

Good lord, of course nothing happened! How could it? Peccary had just been knocked cold; at the moment he didn't *have* any consciousness! Staghorn opened the circuit again and whirled back to the control console.

He looked at the screen. All three men were mounted again. The bearded leader gestured them on.

They set spurs to their horses and galloped away, taking the unconscious Peccary with them.

"No!" Staghorn shouted at the fleeing images. "No, Dr. Peccary! Stay in focus!" The horsemen paid no heed — nor did Staghorn expect them to, rationally. His shouts were only involuntary expressions of despair. Grasping the geographic locator, he twiddled it wildly, managing to keep the three riders in focus for several blocks as they sped down a street of the deserted town.

Then they rounded a corner and he lost them.

By the time he got a focus on the area around the corner they were gone. For several minutes he continued to search, shifting the focal point all over town, but in vain. Dr. Clarence Peccary was lost inside Humanac's labyrinthean brain!

Staghorn was stunned. There would be no difficulty in keeping Peccary's physical body alive indefinitely by intravenous feeding, but it was as good as dead while separated from its sense of identity. Worse yet were the probable consequences to Humanac of having a free soul loose in its mathematical universe. These were too dire to contemplate. The machine's reliability might be altogether ruined and Staghorn's life work destroyed. Under the circumstances there was but one course of action. He had to find Dr. Peccary and get him back into focus, so that he could be disengaged from the computer.

First Staghorn focused the geographic locator on the town square, the point from which Peccary had been abducted; from there he could begin tracking him. Next he set the time control so



that it would automatically disengage the transmitter units in exactly three hours.

Whether or not he could find Dr. Peccary in that period of time Staghorn had no way of knowing; but at least he should be able to get himself back into focus at the proper moment. Then, in case he'd failed to find Peccary, he could reset the time clock and try again.

Next he opened a second transmitter unit, sat down on the little seat and pulled the helmet down on his head. As sensations of vastness and lost dimensions spread through him, he reached out and pressed down the switch that would pour his own brain impulses into Humanac's circuits.

INSTANTLY, as with Dr. Peccary, Staghorn found himself standing in the little park.

He examined his hands and slapped his sides a few times, taking time to assimilate the fact that he felt perfectly solid. Ah, Bishop Berkeley was right all the time! The universe was subjective — a creation of consciousness!

He left off these speculations and recalled himself to his mission.

Glancing around, he saw that people were beginning to reappear. They came up from basements and out of the doors of the dilapidated houses and buildings. If there had been a panic, there was no sign of it now. The men and women moved indolently, returning toward the park and the sunlit streets. All were so much the same age and of such similar beauty that it was difficult to distinguish individual members of the same sex. But he finally recognized the girl Dr. Peccary had identified as Jenny Cheever. She had an attractive strawberry birthmark on her hip.

She strolled back into the park accompanied by a young man. The two of them took possession of the bench where Jenny had been seated earlier. They sat well apart from each other, silently contemplating the other passers-by.

Feeling that his knowledge of Jenny's name constituted a sort of introduction, Staghorn approached the couple. The man paid no attention to him but Jenny watched him curiously. Staghorn was not a man over whom women swooned, and it occurred to him that she found something odd about his dark suit and thick spectacles. He seemed to be the only man in town wearing either.

"How do you do," he said to her. "I believe you're Ben Cheever's daughter."

She continued to examine him languidly, slowly stroking a heavy strand of her auburn hair. "Am I?" she said at last. "It's been so long I've forgotten. But then I had to be someone's daughter and since my name is Cheever, you may be right. I don't remember you. We must have met ages and ages ago."

"This is the first time we've met. You were pointed out to me by a friend."

She considered this with a puzzled air, and, idly curious, said, "Do you want to marry me?"

"Good heavens, no!"

Jenny didn't seem to be insulted by his abruptness. "I just wondered why you'd speak to me," she said. "Because if you want to marry me you have to wait. I've promised to marry him first." She gestured to the man on the bench with her. The man looked at Staghorn for the first time.

"Yeah," he said.

"I SEE," said Staghorn. "And when is this . . . merry event to take place?"

"Some day," Jenny said indifferently. "When we both feel like it. There's no use rushing things. I don't want to use up all the men too soon."

"Use them up?"

"He'll be my twenty-fifth husband."

"Yeah," said the man. "She'll be my thirty-second wife."

"Your marriages can't last very long," said Staghorn. Despite the physical attractiveness of both Jenny and her escort, Staghorn began to feel clammy in their presence. He had an impression of deep ill health, a sense of unclean, almost reptilian lassitude.

"They get shorter all the time," said Jenny, and turned away as though the conversation bored her. The man too had lost interest.

Staghorn stood ignored for a moment and then spoke bluntly.

"Who are the Atavars?"

The word produced the first genuine reaction. Jenny leaped to her feet. The man turned red.

"Don't say that word!" Jenny said.

"I'm sorry. I'm a stranger."

"No one can be that much of a stranger!"

"It's indecent," the man said. He stood up and touched Jenny's arm. "I feel my blood pounding. Let's go get married."

Jenny nodded and, with a cold glance at Staghorn, moved away with her companion. Staghorn was tempted to follow and demand an answer to his question when he saw Miss Terry approaching. Miss Terry was more likely to have the information he needed, and in any case — since she was only in her fifties — she was less than half of Jenny Cheever's age. He hoped this would make a difference in her attitude. That she was capable of emotion he already knew. Her expression, as she approached, was disconsolate.

Staghorn bowed low before her and introduced himself. "Good af-

ternoon, Miss Terry. I'm a stranger to you but since you're a teacher by profession, you may have heard of me. I'm Dr. Roger Staghorn." He straightened, twisted his lips into a smile and waited for Miss Terry to associate his name with those scientific achievements that had so startled the world a hundred years earlier. To his chagrin Miss Terry only gazed at him blankly and shook her head.

"NO," she murmured. Then tears formed in her eyes and she tried to move on. Staghorn stopped her.

"Forgive me," he said. "I'm aware of your recent loss. Your pupil, Paul."

Her tears dropped more freely. "Sooner or later I knew they'd get him. The only child in town. And now I have nothing to do. Nothing at all!"

"They? Just who are they — the Atavars?"

Miss Terry turned pale. "Don't say it," she pleaded. "In time I'll forget."

"But where have they taken Paul? And what will they do with him?"

"He'll die, of course." She spoke these words almost indifferently, then wept copiously as she added, "But I'll live on with nothing to do!"

"Then why didn't someone stop them?" He gestured angrily at the handsome young males wandering through the park. "All these men — why don't they rescue Paul?"

This suggestion so shocked Miss Terry that she stopped weeping. "That's impossible! There'd be violence. Someone might get killed!"

"They think of *that* with a boy's life at stake?" Staghorn felt his rage rising. He was an irascible man by nature and had controlled himself so far only because he knew he was part of an illusion. The sense of illusion was fading rapidly, however. The guiding principles of morals and ethics were themselves abstractions and therefore operated just as powerfully in an abstract universe. He grasped Miss Terry by the arm.

"I'll go after him myself. Where do I find him?"

"You can't find him! If you follow they'll capture you too!"

"I'll chance that! Where have they gone?"

"I can't tell you! They might punish me!"

Staghorn shook her heartily, ignoring the fact that she was over fifty. "Tell me! It so happens that besides Paul, they've captured Dr. Clarence Peccary, and I'm responsible for his life!"

At this statement Miss Terry let out a cry of horror. "They've caught Dr. Peccary? No! No!"

"They most certainly have. So hurry up and tell me — "

"We'll all die!" wailed Miss Terry. "We'll all die!"

"In that case it can't hurt you to tell me."

"The mountains!" cried Miss Terry. "High Canyon!"

It was with great difficulty that Staghorn forced directions from her. The news of Peccary's capture had unsettled her entirely. But despite the roughness with which he was forced to use her, no one came to her rescue. Several young men and women gathered at a safe distance to watch, but they did nothing to interfere.

STAGHORN finally elicited the information that High Canyon was several miles north of town and could be reached by following a dirt road. To his inquiry as to where he could rent a car, Miss Terry went blank again. There were no cars. They had been abolished before Miss Terry was born. She thought there might be one in the museum.

Staghorn glanced at his watch. He'd already been in the transmitter thirty minutes. He had only two and a half hours to get to High Canyon, rescue Dr. Peccary and Paul and return to the square. He dared not cut it too fine. He'd have to be back with a few minutes to spare.

So, after learning the location of the museum, he took off at a run.

It was evident that at some period in the past the town had gone through a surge of prosperity, for there were several quite majestic buildings whose cornerstones bore dates of the late twentieth century. But it was also clear that during the last fifty years not only had few new enterprises been started but the old ones had been allowed to languish. The museum even lacked an attendant at the door — unless one gave this title to the bust of Dr. Peccary which stood on a pedestal just inside the entrance. The plaque beneath the bust noted that Dr. Peccary had given the museum to the city in 1985 "to preserve for our immortal posterity a true picture of the world of mortals."

In the seven and a half decades since, however, this true picture had suffered badly.

In the absence of curtains and draperies, and in the nudeness of the mannekins whose purpose could only have been to display twentieth century costumes, Staghorn gained a hint as to where the populace got at least a part of the rags they wore. He didn't pause to examine details, however. A wall directory with a faded map of the building had given him the location of the wing of twentieth century machines. He headed there at once, passing by displays of tractors, bulldozers, jackhammers and other commonplaces before reaching the automobiles.

There was an excellent selection of standard and sports models, all a uniform gray under their coats of dust — and all of them out of gas.

After so long a time it was doubtful if any would have run anyway. He had simply hoped that one lone attendant might have kept one in working condition.

In the next room, however, he found the reward for his effort. Bicycles. He chose a racing model.

A few minutes later he was pedaling rapidly northward on the dirt road that led to High Canyon.

IV

DR. PECCARY could feel fingers probing at his sore head. A bit of damp cloth or cotton was pressed against his upper lip. The sharp odor that stabbed his nostrils made him jerk his head away and suck in his breath.

"Good. He's coming around."

Dr. Peccary opened his eyes. For a few seconds faces and objects swung around him giddily, but finally the environment achieved stability. He saw that he was in a log cabin, on a bunk. Seated in a chair beside him was a man whose manner could belong only to a doctor. Standing behind the doctor was the bearded man.

"He'll be all right," the doctor said, packing bottles and probes into his little black bag.

Dr. Peccary sat up and touched the back of his head gingerly. It was very, very sore. He'd never had an illusion quite like this before. Besides, the illusion had persisted too long. How long had he been out? Hours? Days? Good lord, had Staghorn deserted him?

The bearded man ushered the doctor out, locked the door and came back to observe Peccary. He put a booted foot on the chair and leaned an elbow on his knee.

"I hardly need tell you, Dr. Peccary," he said, "that this is the happiest day of my life."

"But not of mine," Peccary responded sourly. "I doubt if you can make it a bit worse by telling me what this is all about and what you plan to do with me."

The bearded man showed surprise. "You don't know?"

"No! I don't know!" Peccary was losing his detachment.

The bearded man considered him thoughtfully. "I shouldn't have let the doctor go so soon. Apparently you were hit harder than we thought. On the other hand it's just possible, living as you have these last seventy years locked up in your palace and isolated from the rest of the world, that you've lost touch with what is going on."

"I've lost touch with a great many things. Obviously I'm a prisoner. How long is this going to last?"

"Only until my demolition squad is ready. Then we take you to your production plant where you produce the Y Hormone. There will be a gun at your back, of course. You know the combination to get us safely past the automatic guards. Ah, I've waited all my life for this! Once we're in the plant, my men will do the rest."

"You're going to blow it up?"

"Absolutely!"

"AND what do you gain by that? The formula for the Y Hormone still exists!"

The bearded man laughed. "Yes, I can see you've been out of touch with the world. It's been thirty years since the country produced anyone capable of working with that formula. That's when the last university closed down — thirty years ago."

"That's shocking," said Dr. Peccary. "But my experiments showed conclusively that the Y Hormone has no deleterious effect upon intelligence. I took every precaution!"

"Nothing wrong with anyone's intelligence," said the bearded man, "except that no one's under pressure to use it. When the future stretches on indefinitely, it gets easier and easier to put things off until tomorrow — even education — until finally it's put off forever. There's only one man living who understands that formula."

"And who is that?"

The bearded man looked down at him balefully. "Yourself, Dr. Peccary! That's why we're so delighted to capture you — because now you'll never use it again!"

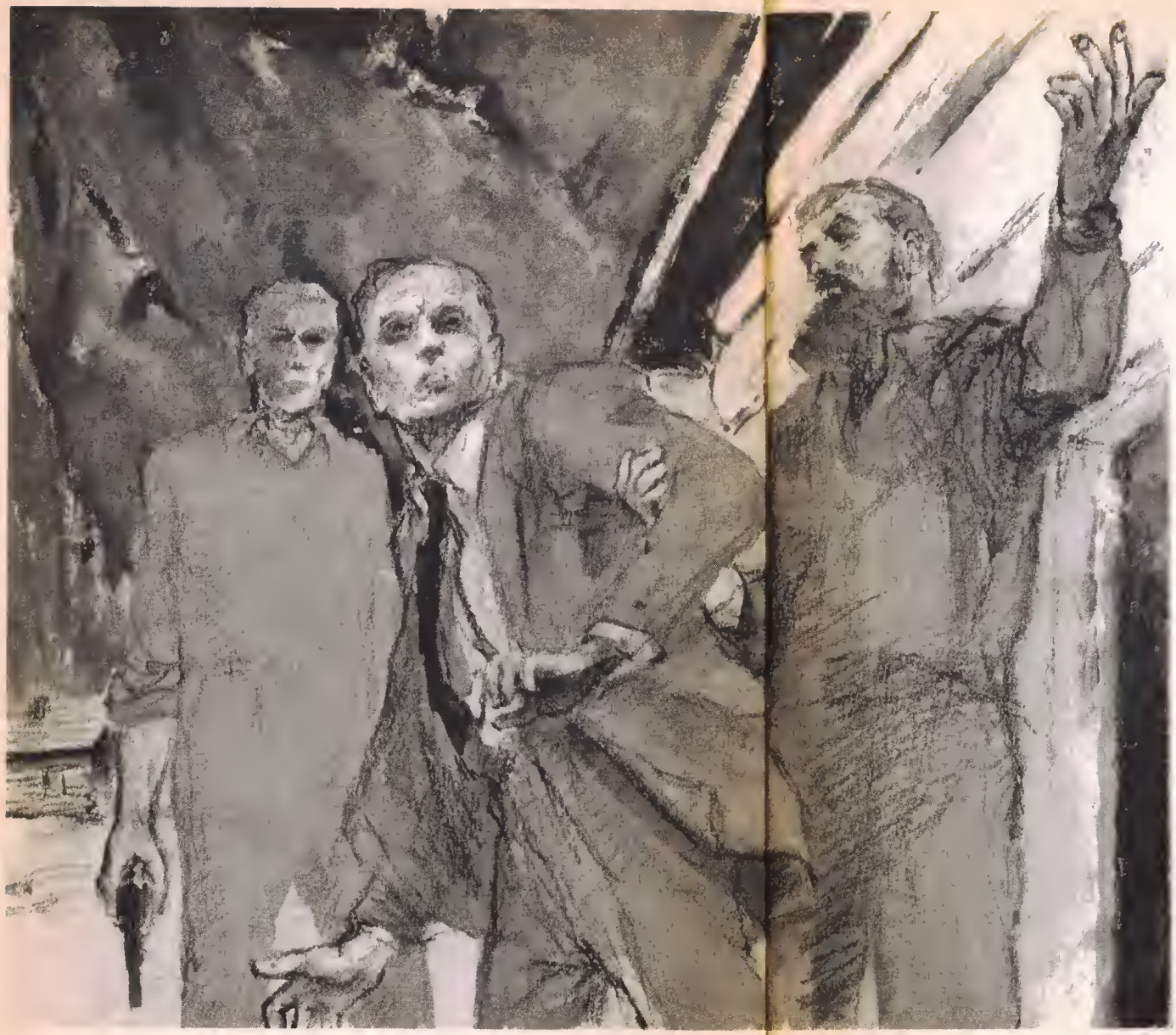
Peccary stared at him aghast. "I understand now! You mean to steal it. You mean to force it out of me and start producing the Y Hormone yourself!"

This accusation resulted in a violent reaction from the bearded man. He grasped Peccary by the lapels of his jacket and hauled him to his feet. Peccary could feel the man's powerful hands trembling with rage.

"You fool! You utter imbecile! Don't even yet know who we are?"

Peccary was so throttled by the man's clutch that he could only waggle his head in the negative. The bearded man's face came close to his.

"We're mortals!" He flung Peccary back on the bunk contemptuously. "We accept our allotted span of years and call it quits. But during that time we live! We have to. It's all the time we have!" He glared at Peccary a moment before resuming in a milder tone. "After we destroy your production plant, Dr. Peccary, we're going to kill you. You might as well know. It's the only way to make certain that the formula for the Y Homone will never be used again."



Then he smiled. "But take consolation. With the plant destroyed you'd gradually get old and die anyway. For the brief period before we execute you, you might even regain an appreciation for life." He bent suddenly, gripped Peccary's wrist and hauled him to his feet again. "In fact, you might have forgotten what life is. I'll refresh your memory. Come along!"

He dragged Peccary to the door, opened it and led him outside.

Peccary looked around. He found himself on the level floor of a canyon whose vertical walls rose high on either side He recognized the place at once. Often when he was a boy he'd come here to camp overnight. It had been a delightful wilderness with a year-round stream.

THE canyon had changed. Some forty cabins like the one he'd been in were built in the shade of the southern cliff, and the canyon floor was covered with green crops and pasture. He heard singing, laughter. People were at work in the fields, children were building rock castles at the base of the cliff. On a cabin porch two elderly men sat playing checkers.

"The last of the mortals," said the bearded man. "If there are any other colonies we don't know of them. But when you're gone, Dr. Peccary, they'll be the first of a

new race! You asked earlier what we intended to do with the boy we kidnaped. There he is." And he pointed toward the canyon wall.

Peccary looked and saw Paul climbing upward along crevices and ledges. The bearded man cupped his hands to his mouth and shouted. "Paul! How is it?"

The boy straightened on a rocky pinnacle and looked back. His face was ecstatic. "I'm climbing!" he crowed. "I've never been so high! I'm climbing all the way to the top!" He waved and clambered on.

"Once in a great while a child is born to one of the immortals," the bearded man said. "If we find him in time we can save him."

Peccary watched the boy move upward along the cliff. "Then why was he so terrified when you captured him?"

"Because he'd had it pounded into him that if the Atavars got him he'd die. He will, too, eventually. Like any other mortal. But in the meanwhile — " He broke off and turned on Peccary savagely. "You see, there's one thing you didn't consider at all! The Y Hormone stops aging and keeps people healthy, but it can't protect them from accidents. The immortals can still die if they get hit by a train or fall overboard in the middle of the ocean. A mortal can accept the possibility of accidental death because he knows he's going to die anyway sooner or later, but can't you see the psychological shock to the immortals when one of them dies? A man who had the potential of living forever, suddenly wiped out! It's like the end of the world. And so they started eliminating hazards. Automobiles went first. Then planes and trains. They weren't needed anyway, because people stopped traveling. To travel is to court accident. But one precaution breeds another, and before long people were avoiding all dangerous occupations. With immortality at stake, even the smallest risk was too much. Planing mills, machine shops, mines, smelters — bah! Name me an occupation that doesn't occasionally entail some hazard. Even motherhood!"

"BUT I anticipated the need for birth control! I had the plans all set up."

"There was birth control all right, but not the way you planned it. Ten years after your hormone went on the market the world had an extra five billion people. For a few years they produced a surge of energy until the older immortals started eliminating the hazards. After that, starvation set in. Three-fourths of the population died. Your hormone can't keep people from starving, either, and it was a shock from which those who survived never recovered. Every new mouth to feed was a threat. Childbirth practically stopped. But that left the remaining immortals in a very soft position. For years now they've been existing on the leftovers from civilization, finding shelter in the old houses, ransacking the attics and closets of the dead for scraps of clothing, daring to plant a few crops in areas where they'll grow with little care. And after that — boredom."

He thrust an accusing finger at Peccary. "And you dared to use the slogan, 'Time to achieve perfection!' I tell you, Dr. Peccary, the source of man's courage and energy is the knowledge of death! Man was meant to be mortal. We strive because we know the time is short. We climb mountains, make love, descend to the depths of the sea and reach for the stars because the certainty of death urges us on. It's the only certainty the world had — and you would destroy it!"

Peccary quailed before the bearded man's ferocity. He was relieved when his captor's attention was diverted by a party of horsemen who rode up in neat order and stopped before their leader. Several horses were loaded with explosives.

"We're ready, Sir," their spokesman said.

"Good," said the bearded man. "I see no reason to delay an instant."

An extra horse had been provided for Dr. Peccary. He was on the point of being forcibly hoisted into the saddle when he was given a reprieve by a diversion of another kind.

Approaching on the path through the center of the canyon, pedaling his bicycle frantically, came — Staghorn!

HE rode up to the group and leapt from his seat, his face blue from exertion. He'd been climbing all the way from town. He stood gasping for breath while he dragged his big gold watch from his pocket and consulted the time. He managed a groan. "Only thirty minutes left. Miles to go! But it's down hill all the way; we can make it!" He shoved his bicycle forward. "On the handlebars, Dr. Peccary, quick!"

Peccary would have liked nothing better. But his movement toward Staghorn was stopped instantly by the men who were trying to put him on his horse. "They're going to kill me!" he cried. "They're going to blow up my factory and kill me!"

"No, no!" said Staghorn. "That can't be. The consequences would be disastrous." He turned to the bearded leader. "Look, Sir, I have no time to explain, and I'm sure you wouldn't believe me even if

I did. All of you are illusions! This entire situation is nothing but a mathematical probability. And so I insist that you release my friend, Dr. Peccary, at once!"

The bearded man was so amazed by this request that he forgot to take offense. He gaped at Staghorn. "Who are you? I can't imagine an immortal risking himself on a bicycle!"

"At this moment I'm desperately mortal. and so is Dr. Peccary!"

"Nonsense. Dr. Peccary is a hundred and forty-two years old!"

"I've told you this situation has no existence in reality!"

The bearded man stomped the ground. "I've been living on this planet fifty-five years. I know reality when I see it! And what's more, I'm beginning to think you are one of the immortals. Even an immortal might show some courage when he knows he's going to be deprived of the Y Hormone."

"If you must know, I'm Dr. Roger Staghorn! I can see that there's industry and education in this canyon and so it's possible you've heard of me. I have quite a record of scientific achievements back in the twentieth century."

AT this announcement the bearded man goggled at him, then threw back his head and laughed uproariously. "You couldn't have picked a worse masquerade. Dr. Roger Staghorn died in 1994!"

"I can't help that. I'm Staghorn!"

The bearded man stopped laughing and thrust his face forward threateningly. "You're a fraud! Because it so happens that *I'm* Staghorn!"

"You? Staghorn?"

"I'm Henry Staghorn, great-grandson of the real Dr. Roger Staghorn!"

"Impossible. I have no intention of ever getting married!"

"Dr. Roger Staghorn married when he founded the Atavars, ninety years ago! He saw the need of leaving mortal offspring and sacrificed himself to that end. And he's buried in the cliff over there. Furthermore, he became Dr. Peccary's most bitter enemy. If he were alive today, he'd be tying the knot for Peccary's neck instead of trying to rescue him." The bearded man drew a revolver from inside his jacket. "I think I'll execute you here and now!"

Peccary all but fainted. If Staghorn were killed all hope was gone. But Staghorn threw up a commanding hand.

"Stop, Henry! What you say may be perfectly true from your peculiar viewpoint. But I'm still Roger Staghorn! Are you going to shoot your own great-grandfather?"

Staghorn's tone, rather than his words, made the bearded man pause. He turned to a companion.

And in that instant Staghorn moved. After all, he was slightly younger and more agile than his great-grandson. He leapt onto his bicycle, shouting at Peccary, "Turn around!"

Peccary whirled and sprang in the air as Staghorn aimed the bicycle between his legs. He landed neatly on the handlebars, and with simultaneous kicks sent the men on either side sprawling. Then he and Staghorn were off down the canyon.

Behind them they could hear the thundering hoofs as the horsemen started in pursuit.

"Go, Staghorn, go!" Peccary shouted.

The race would have been lost at once except for the downhill grade. But because of it, Peccary's added weight was a help instead of a hindrance. Shots rang out; bullets bounced from the rocks on either side.

They made it out of the canyon's mouth and the grade increased on the long straightaway toward town. Staghorn's feet spun as they darted downward, maintaining their lead in front of the pursuing horsemen. The town loomed ahead of them, closer and closer until at last they sped into a street where the buildings gave them protection from bullets.

The bicycle slowed. They were on level ground again. Staghorn skidded around a corner and stopped so suddenly that Dr. Peccary was propelled forward and landed on his feet at the mouth of an alley. Abandoning the bicycle, both men charged into it.

"The square!" Staghorn gasped. "I'm focused on the square!" He hauled out his watch as he ran. Only seven minutes remained.

THE deep-throated alarm whistle was sounding over the town. Its inhabitants must have sighted the approach of the Atavars for they were scurrying into buildings and basements, leaving the way clear for Peccary and Staghorn. They emerged from the alley and turned left for a block, then doubled back as they were sighted by the searching horsemen.

The hue and cry was on again, but Peccary's familiarity with his home town served them well until they came within sight of the square. Then they stopped in dismay and ducked into a doorway.

Across the street in the center of the little park, as though divining that it must be their destination, was Staghorn's great-grandson and three of his men. Their position enabled them to watch all four approaches to the square at the same time.

Staghorn tugged out his watch again. Two minutes. They had to be in focus! A second late and they'd be locked forever. He

watched the second hand creep around the dial.

"We have to chance it," he said. "When I start running, run with me!"

The second hand crept on. A minute left. Staghorn judged the distance from their hiding place to the grassy plot where the bearded man was standing. About seventy-five yards. Could he do seventy-five yards in ten seconds? Could Peccary? Thirty seconds left . . . twenty-five . . . twenty. He'd never gone through such a painful count-down . . fifteen seconds

"Ready, Dr. Peccary. It's now or never."

Thirteen . . . tweleve . . . eleven . . . "Go!"

Staghorn burst from his hiding place with Peccary at his heels. They dashed for the square. They were over the curb and into the street before the men in the park saw their approach and let out cries of triumph.

"Dip and weave, Dr. Peccary! Dip and weave!"

They dipped and wove, while bullets ripped at their clothing. They were running right into the fire, making better targets at every stride. Staghorn ran with his watch in his hand, and never had time and distance diminished so slowly.

Seven seconds, six, five, and they were still alive and across the street. Four seconds, three, two.

They were over the park and onto the grass. A bullet crashed into Staghorn's leg and he fell, diving forward.

"Got him!" cried his great-grandson. "Now get Peccary!"

THREE shots rang out as one. But at some point in the bullets' flight toward Peccary and Staghorn, the square and everything in it vanished.

Staghorn found himself sitting in Humanac's transmitter unit.

The time clock had functioned. He was disengaged.

He lifted the helmet from his head and stumbled from the cell, drawing a trouser leg up to examine his leg. It seemed that he could detect a scar. Then he turned and helped Dr. Peccary from the other transmitter. Both men stepped toward the console to look at Humanac's screen.

It was still focused on the little park. The bearded man and his companions were now exchanging glances of consternation. After a moment the bearded man wet his lips. "Maybe he was right," he said in awed tones. "No one but my great-grandfather could ever do a trick like that. And maybe what he said is true. It's all illusion. We're nothing but mathematical probabilities!"

At this point Staghorn hauled down the master switch. The screen went dead as Humanac's power was shut off.

Some twenty minutes later he had finished draining Dr. Peccary's sample of the Y Hormone from Humanac's analyzer and had thoroughly cleansed the computer of any last traces of it. He handed the little bottle of the hormone back to Dr. Peccary.

"There," he said. "As far as Humanac is concerned, it's as though it never was. Do as you wish."

Dr. Peccary looked at the bottle sadly. It was worth millions. Billions.

Then slowly he moved to a laboratory sink and poured the contents of the bottle down the drain.

"I can't help wondering," mused Staghorn, "of whose computer we're a part right now — slight factors in the chain of causation that started God knows when and will end . . ."

"When someone pulls the switch," said Dr. Peccary.

— DAVID DUNCAN

★ ★ ★ ★ ★

FORECAST———————

The next issue, like this one you have in your hands, looks like a peach, a pip, a corker, a — how about leaving the superlatives to Mad Ave and saying it's another darned good issue?

Among the novelets are:

FIGHTING SPIRIT by Daniel F. Galouye, who has never left the field and we hope never will. Blurb: "Space combat was what I'd been trained for. I had wangled the job. Now all I had to do was find out what I was supposed to combat." No superlatives, remember, but it's not easy — the story behind that blurb is really taut.

Then there's THE WRONG WORLD by J. T. McIntosh, who also hasn't been a stray. Say "Oops, sorry" to a planet that has been conquered by mistake? No, find a diplomatic formula—meaning justify conquest—or else!

And H. B. Fyfe, who has been away far too long, returns with ROUND-AND-ROUND TRIP, a James Thurber kind of story, as can be noted from the following: "All he wanted to do was go from here to there — but somehow the entire Milky Way had been converted into a squirrel cage."

Short stories, certainly, and possibly another novelet, perhaps a short-short . . .

And Willy Ley adds THE MOON WORM to our regular features. It's a weird one, right enough. Downright hard to believe, but true, every word of it.

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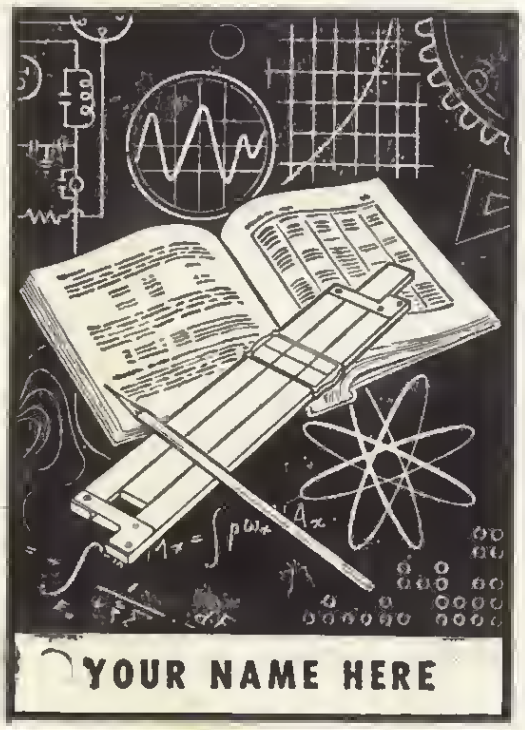
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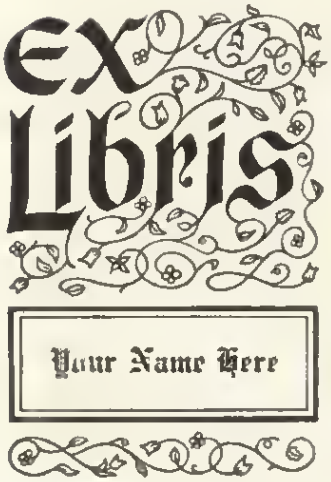
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